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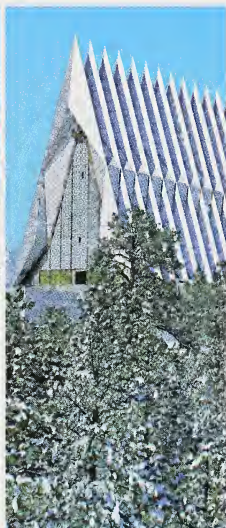



UNITED STATES

AIR

FORCE

ACADEMY





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# ANNUAL CATALOG



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FLARE

"MAN'S FLIGHT  
THROUGH LIFE IS  
SUSTAINED BY THE  
POWER OF HIS  
KNOWLEDGE."

*number 8 • may 1963*





*This catalog should not be considered a contract between the United States Air Force Academy and any prospective candidate. The curriculum and policies are subject to change to meet varying requirements of the Air Force.*



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# Calendar 1963-1964

5 Jun 63, Wednesday	. . . . . Summer Term Begins
24 Jun 63, Monday	. . . . . Class of 1967 Enters
4 Jul 63, Thursday	. . . . . Holiday, Independence Day
18 Aug 63, Sunday	. . . . . Summer Term Ends; Fall Semester Begins
2 Sep 63, Monday	. . . . . Holiday, Labor Day
11 Nov 63, Monday	. . . . . Holiday, Veterans' Day
28 Nov 63, Thursday	. . . . . Holiday, Thanksgiving Day
20 Dec 63, Friday	. . . . . Fall Semester Ends; Christmas Leave Begins
5 Jan 64, Sunday	. . . . . Christmas Leave Ends; Spring Semester Begins
21 Feb 64, Friday	. . . . . Holiday, George Washington's Birthday
18 Mar 64, Wednesday	. . . . . Mid-Semester Holiday Begins
22 Mar 64, Sunday	. . . . . Mid-Semester Holiday Ends
28 May 64, Thursday	. . . . . Spring Semester Ends
29 May 64, Friday	. . . . . Holiday, Memorial Day
30 May 64, Saturday	. . . . . June Week Begins
3 Jun 64, Wednesday	. . . . . June Week Ends; Graduation Day, Class of 1964
3 Jun 64, Wednesday	. . . . . Summer Term Begins
29 Jun 64, Monday	. . . . . Class of 1968 Enters

When a holiday falls on Saturday, the Friday preceding will be observed.



# Mission



The Air Force Academy provides instruction, experience, and motivation to each cadet so that he will graduate with the knowledge, character, and qualities of leadership essential to his progressive development as a career officer in the United States Air Force.



***TO: Young men interested in  
the Air Force Academy***

The primary effort of a cadet during four years at the Air Force Academy is spent in meeting the requirements for an academic degree. But the Academy offers more and asks more than academic achievement. The cadet must also learn and demonstrate that he can fulfill the obligations of command with all the leadership skill, self-control, and ethical conduct which that responsibility demands.

Before you seek a cadet appointment, match yourself, your abilities, your aspirations, your personality, and your health against the demands of cadet life and a service career. Do not limit yourself to this catalog in learning what the Academy offers and requires. Read all you can find about the Academy in periodicals and books and talk with someone who has first-hand knowledge of the Academy if you have an opportunity.

We can determine whether you are academically and physically able to master the Academy program. But we must depend largely upon you to measure your motivation. You must satisfy yourself that you belong at the Academy, that you are motivated on the strength of your own desires rather than the push of a well-meaning parent or friend, and that you have a real understanding of the purpose and obligations of cadet life. If you can do this, you will have every chance to succeed as a cadet.

ROBERT H. WARREN  
Major General, USAF  
*Superintendent*



## OBJECTIVES

The Air Force Academy accomplishes its mission through a four-year curriculum composed of academic courses, airmanship training, physical education and athletics. Successful completion of the curriculum entitles the cadet to graduate with a Bachelor of Science degree and a Regular commission as a second lieutenant.

### ***The Academic Program***

Provides general courses in liberal arts and sciences which furnish a foundation for future development in any of the numerous career fields open to Air Force officers.

Provides elective courses to meet the needs of the individual cadet in developing his full academic potential.

Motivates the cadet for continued educational development after graduation by self-instruction and attendance at graduate schools.

Prepares the cadet to fulfill his intellectual duties as a citizen and a dedicated public servant in the Air Force.

### ***The Airmanship Program***

Develops in the cadet the moral character and qualities of leadership desired in an Air Force officer.

Instills in the cadet a deep founded belief in national defense, pride in the Air Force, and inspiration to give his best in a lifetime of service to his country.

Equips the cadet with fundamental military knowledge and skills required of a junior officer, and provides him with the professional military education for continued development leading to the highest command and staff positions.

Motivates the cadet toward a career in the aerospace age and provides a foundation for future specialization in manned and unmanned aerospace systems.

### ***The Athletic Program***

Develops desirable traits of character such as persistence, desire-to-win, and aggressiveness which are essential to leadership.

Develops those qualities needed to perform physical tasks without undue strain.

Develops a positive attitude toward physical fitness.

Promotes the *esprit de corps* of the Cadet Wing through healthy competition and pride in an outstanding athletic program.

# **BOARD OF VISITORS**

## *Appointed by the President of the United States*

<b>Hon. James H. Douglas</b>	<i>Attorney (former Deputy Secretary of Defense), Chicago, Illinois</i>
<b>Dr. Fred H. Harrington</b>	<i>Vice President for Academic Affairs, University of Wisconsin, Madison, Wisconsin</i>
<b>Dr. Frederick L. Hovde</b>	<i>President, Purdue University, Lafayette, Indiana</i>
<b>Mr. John Lawrence</b>	<i>Executive Vice President, Dresser Industries, Inc., Dallas, Texas</i>
<b>Gen. Thomas D. White</b>	<i>Former Chief of Staff, USAF, Washington, D. C.</i>
<b>Dr. Payson S. Wild</b>	<i>Dean of Faculties, Northwestern University, Evanston, Illinois</i>

## *Appointed by the Vice President of the United States*

<b>Sen. Barry M. Goldwater</b>	<i>Arizona</i>
<b>Sen. Spessard L. Holland</b>	<i>Florida</i>
<b>Sen. Hubert H. Humphrey</b>	<i>Minnesota</i>

## *Appointed by the Speaker of the House*

<b>Rep. J. Edgar Chenoweth</b>	<i>Third District of Colorado</i>
<b>Rep. John F. Flynt, Jr.</b>	<i>Fourth District of Georgia</i>
<b>Rep. Melvin R. Laird</b>	<i>Seventh District of Wisconsin</i>
<b>Rep. Byron G. Rogers</b>	<i>First District of Colorado</i>

## *Ex-officio Members of the Board*

Chairman of the Armed Services Committee of the Senate

<b>Sen. Richard B. Russell</b>	<i>Georgia</i>
<i>Represented by</i>	
<b>Sen. Howard W. Cannon</b>	<i>Nevada</i>

Chairman of the Armed Services Committee of the House

<b>Rep. Carl Vinson</b>	<i>Sixth District of Georgia</i>
<i>Represented by</i>	
<b>Rep. L. Mendel Rivers</b>	<i>First District of South Carolina</i>

A Board of Visitors is established by law to inspect the curriculum, instruction, and facilities of the Academy each year.



## OFFICERS OF ADMINISTRATION

### SUPERINTENDENT

**Maj. Gen. Robert H. Warren, B.S.**

### DEAN OF THE FACULTY

**Brig. Gen. Robert F. McDermott, B.S., M.B.A., LL.D.**

### COMMANDANT OF CADETS

**Brig. Gen. Robert W. Strong, Jr., B.S.**

### DIRECTOR OF ATHLETICS

**Col. M. L. Martin, B.S.**

### CHIEF OF STAFF

**Col. Howard J. Withycombe, A.B., M.S.**

### STAFF CHAPLAIN

**Col. Stephen J. O'Connor, C.S.S.R., B.A.**

### REGISTRAR

**Col. Virgil J. O'Connor, B.A., M.A., Ed.D.**

### *The Academy Board*

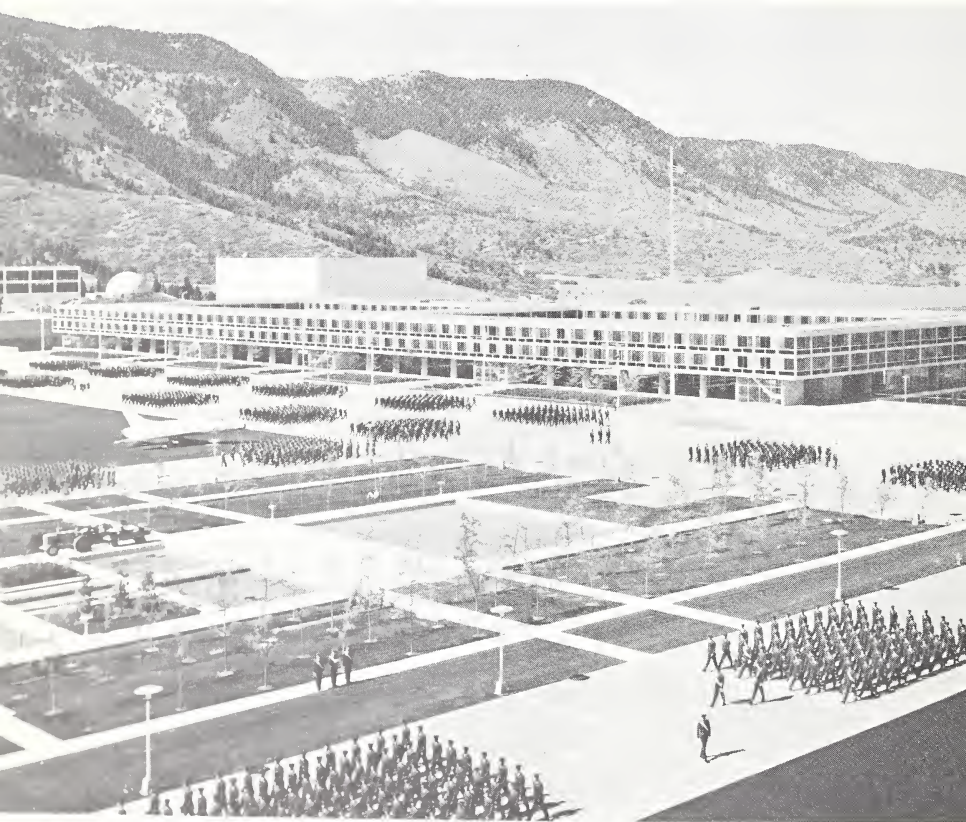
#### *Superintendent, President of the Board*

Dean of the Faculty	Chairman, Basic Sciences Division
Commandant of Cadets	Chairman, Applied Sciences Division
Director of Athletics	Chairman, Humanities Division
Chief of Staff	Chairman, Social Sciences Division
Registrar	Wing Air Officer Commanding
	Director, Cadet Operations and Training

## HISTORY

A separate service academy to prepare outstanding young men of the nation for military leadership in air defense had been the dream of American airmen since World War I. This dream was realized at last when President Eisenhower signed legislation establishing the Air Force Academy on 1 April 1954.

The first major step toward creation of the Air Force Academy was taken in January 1949, when the first Secretary of Defense James Forrestal appointed a service academy board to determine among other matters the need for a third service academy. The chairman of this board was Dr. Robert L. Stearns, then President of the University of Colorado, and the vice chairman was General





Dwight D. Eisenhower, then President of Columbia University. The Board found that the needs of the Air Force could not be met by any desirable expansion of the existing service academies and recommended that an Air Force Academy be established without delay. It was not until 1954, at the close of the Korean conflict, that Congress authorized establishment of the Academy.

The effort to choose a site for the Academy began immediately. Harold E. Talbott, then Secretary of the Air Force, appointed a site selection committee, composed of prominent civilian and military leaders, who screened some 400 locations and visited proposed sites in 22 states. On 24 June 1954, Secretary Talbott announced that the site eight miles north of Colorado Springs would be the permanent home of the Air Force Academy. Lowry Air Force Base in Denver was named as the temporary site of the Academy until construction of the permanent Academy was completed.

General Hubert R. Harmon, who had been a member of the site selection committee, came back to active duty from retirement at the personal request of President Eisenhower to become the first Superintendent of the Air Force Academy. Under his direction a program of education, with the flexibility to meet rapidly changing developments of the aerospace age, was carefully designed and perfected. The basic fundamentals and the newest findings of science were blended with the social sciences and the humanities to form a balanced program of education for future Air Force officers.

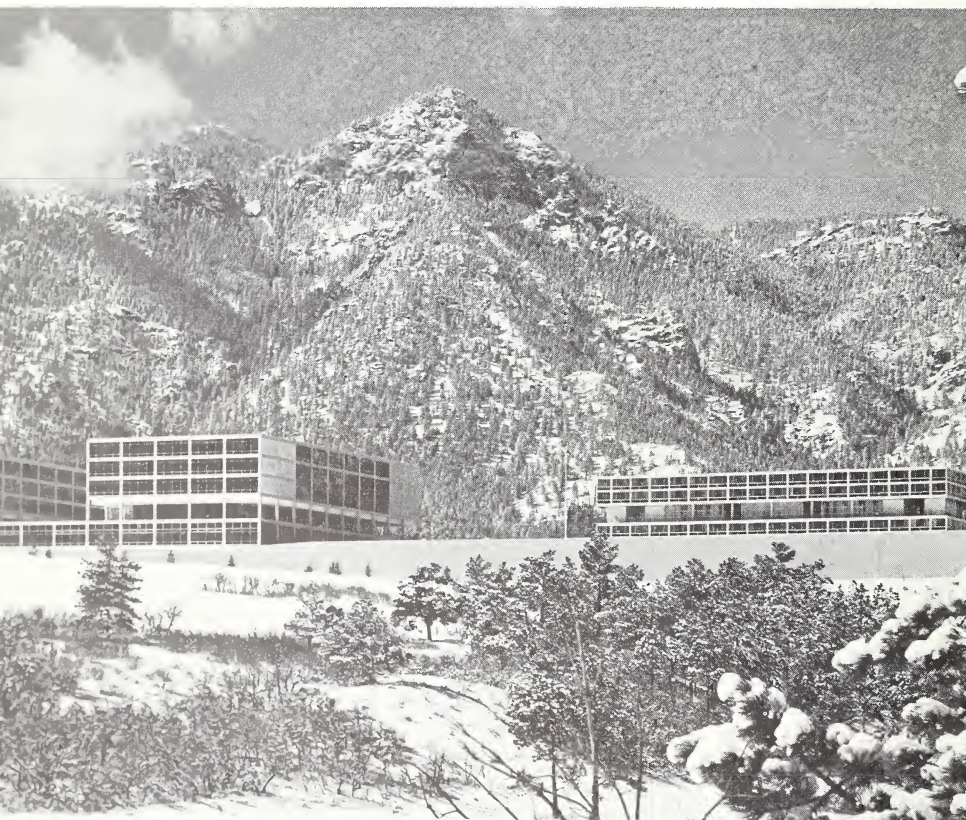
On 11 July 1955, in ceremonies at Lowry Air Force Base, the nation dedicated its first new service academy in more than a century. At these ceremonies the first class of 306 cadets was sworn in. While a curriculum, a tradition, and a way of life were being formed at Lowry, one of the greatest community building projects in the nation's history went into operation at the permanent site some sixty miles away. The Academy builders moved at a fast pace on this prodigious project. They were asked to have the cadet buildings ready for occupancy by the time the first class reached its final year — and the goal was met. On 29 August 1958, the cadets began to move into their new quarters in the shadow of the Rampart Range of the Rockies.

The Academy is now admitting full-size classes of approximately 800 cadets each year. In 1962 the Cadet Wing reached a stabilized strength of approximately 2,500 cadets.

## FACILITIES

The Academy site stretches for 17,900 acres, with 10,000 suitable for construction. This expanse of land has allowed for an airfield and further plant expansion if Congress should so order. The topography of the site is a series of finger-like mesas with valleys in between, backed to the west by the Rampart Range of the Rocky Mountains and overlooking the plains to the east. The altitude ranges from approximately 6,200 to 7,400 feet within the site.

The main complex where the cadets live and attend classes contains the following buildings, several of which were named for famous Air Force leaders. The buildings are designed in contemporary architectural style, featuring glass, aluminum, steel, and white marble.



**Vandenberg Hall (Cadet Dormitory)** — All cadets are housed in this quarter-mile-long building, two cadets to a room. In addition to 1,320 rooms, the dormitory contains a cadet store, tailor shop, barber shop, class lounges, and cadet activities rooms.

**Mitchell Hall (Cadet Dining Hall)** — The dining hall, enclosed in glass on three sides, is large enough to seat the entire Cadet Wing. Cadets assemble in front of the dormitory and march to the dining hall in formation. Visitors at the Academy are permitted to watch the noon formation from the Court of Honor behind Harmon Hall.

**Harmon Hall (Administration Building)** — Offices of the Superintendent and his staff are located here on the west side of the cadet complex.

**Fairchild Hall (Academic Building)** — Cadet classes are conducted in this large building containing 168 classrooms, 45 science labs, 5 lecture halls, the Academy Library, a dispensary, and faculty offices. To the south of this building is an aeronautics laboratory.

**Arnold Hall (Cadet Social Center)** — Social activities for cadets are held in this building which includes a ballroom, a theater, and recreational rooms.

**Cadet Chapel** — The focal point of the area is the Cadet Chapel with 17 towering aluminum spires. The Chapel is divided into three areas: a Protestant section seating 900, a Catholic section seating 500, and a Jewish section seating 100.

**Planetarium** — Housed in a dome-shaped structure is the Planetarium used to teach celestial navigation and astronomy to cadets.

**Cadet Gymnasium** — The gymnasium contains two swimming pools, basketball and volleyball courts, boxing and wrestling rooms, squash courts, handball courts, a gymnastics room, and a rifle and pistol range. Surrounding the gymnasium are a number of athletic courts and fields.

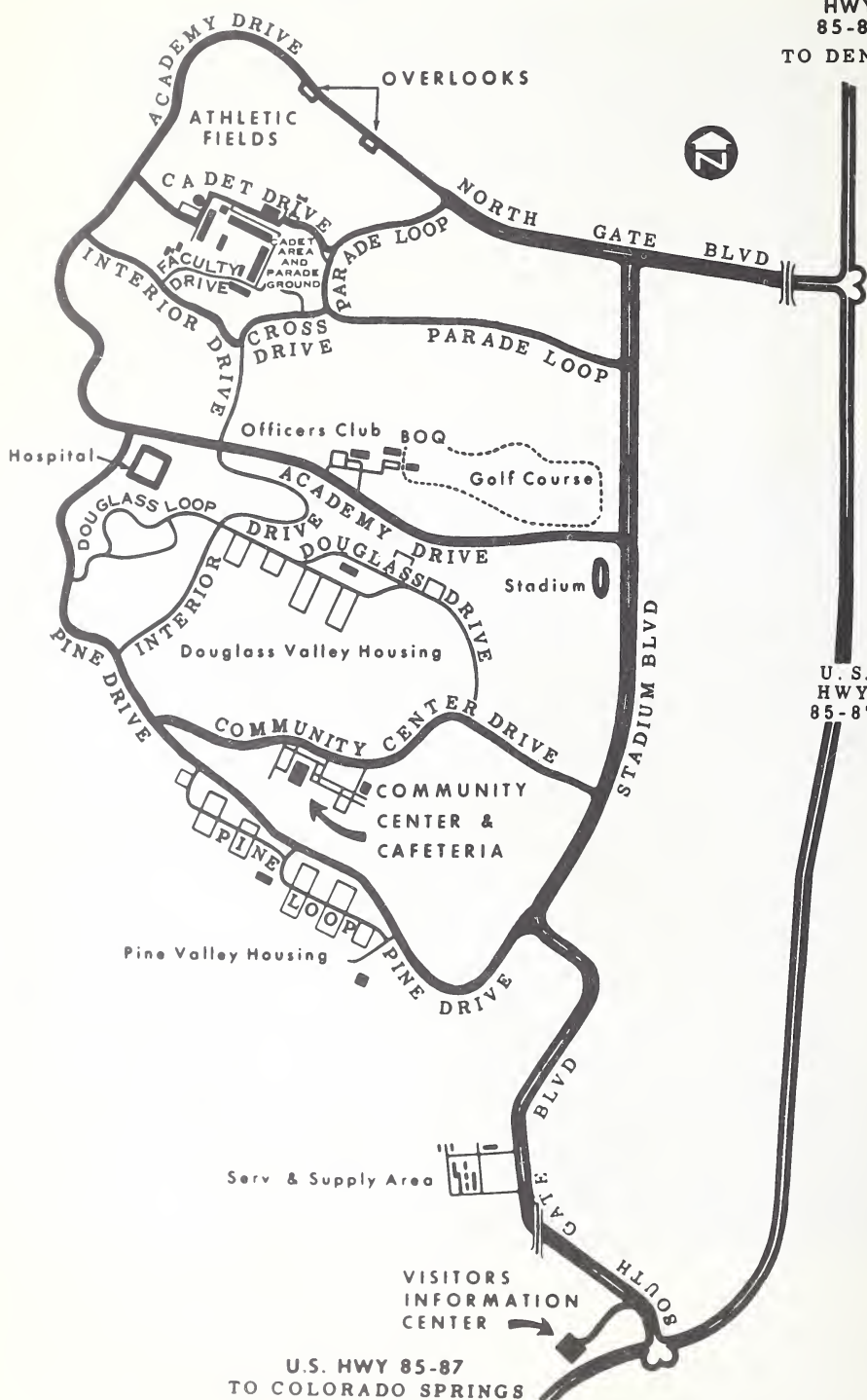
Located in areas south of the cadet complex are two housing developments for officers and airmen, a shopping center, a hospital, the Academy Preparatory School, and a supply and service center. A 40,000-seat football stadium and an 18-hole golf course have been constructed with private funds donated to the Air Force Academy Foundation.

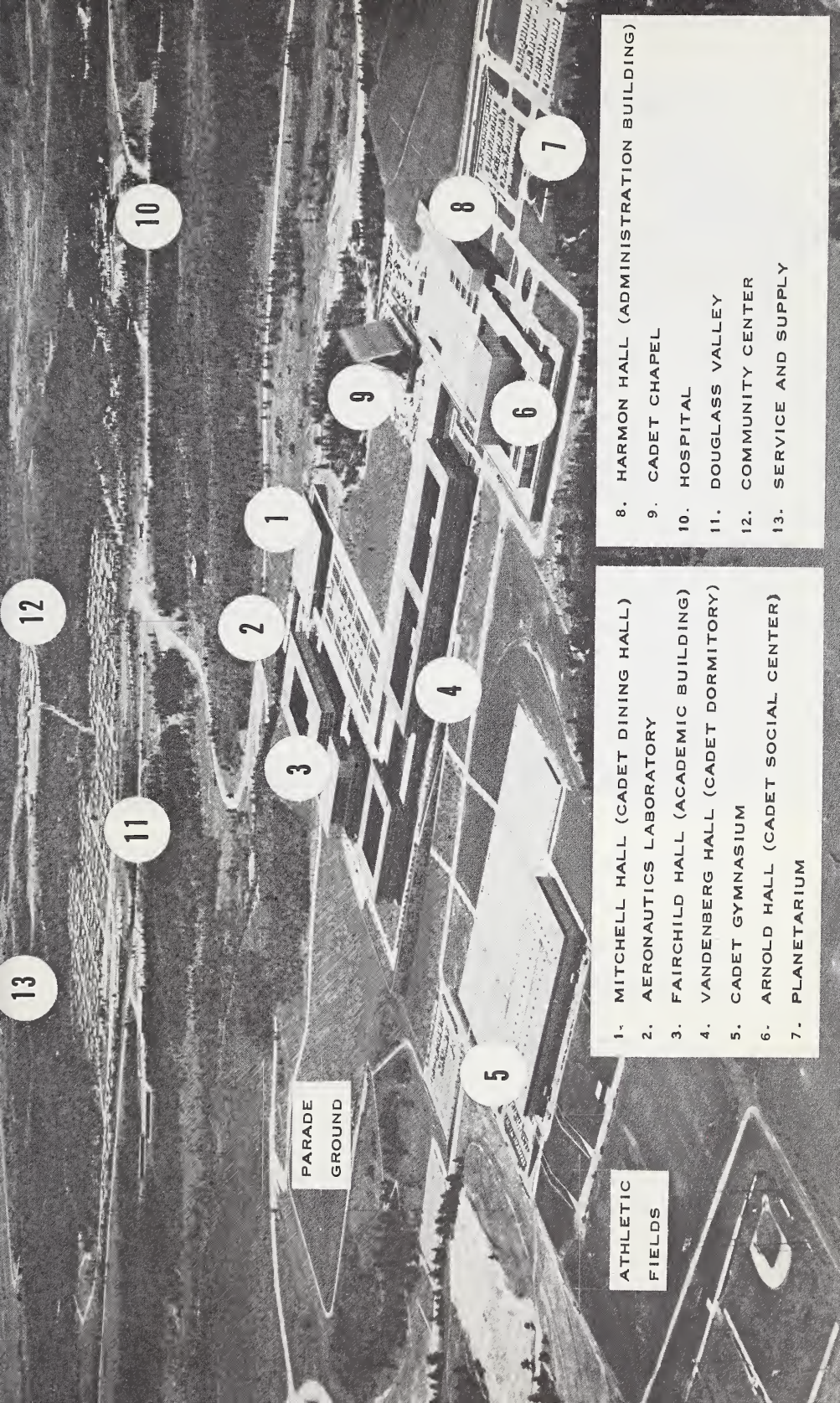
The public is invited to tour the Academy site at any time. A brochure with a map is given to every visiting car at the Academy gate to assist the tourists in locating the areas of interest.



# Map of the Air Force Academy

U.S.  
HWY  
85-87  
TO DENVER





13

12

11

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PARADE  
GROUND

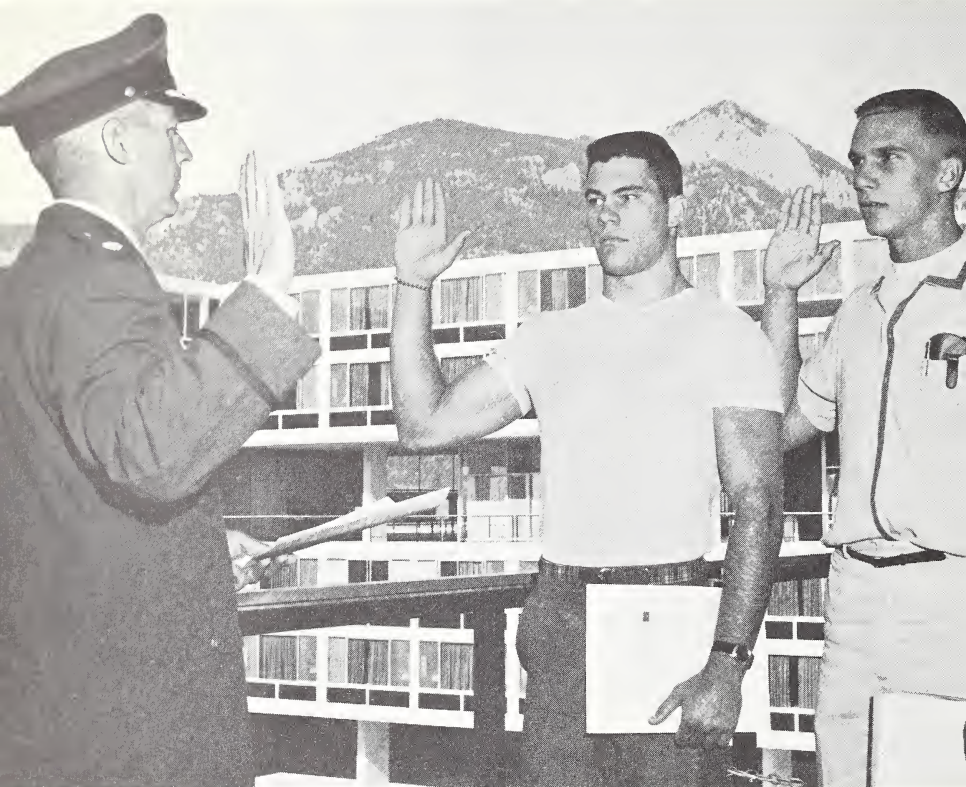
ATHLETIC  
FIELDS

1. MITCHELL HALL (CADET DINING HALL)
2. AERONAUTICS LABORATORY
3. FAIRCHILD HALL (ACADEMIC BUILDING)
4. VANDENBERG HALL (CADET DORMITORY)
5. CADET GYMNASIUM
6. ARNOLD HALL (CADET SOCIAL CENTER)
7. PLANETARIUM

8. HARMON HALL (ADMINISTRATION BUILDING)
9. CADET CHAPEL
10. HOSPITAL
11. DOUGLASS VALLEY
12. COMMUNITY CENTER
13. SERVICE AND SUPPLY



# Admissions



## Important Dates

	1963	1964
Application and Nomination Period	1 June thru	31 January
Air Force Examinations	December thru	March
College Board Tests (regular dates)	7 December	11 January 7 March
College Board Tests (make-up date)		28 March
Cadet Class Selected		May
Cadet Class Enters		29 June



**Registrar**  
**Col. Virgil J. O'Connor**

*Counselors, prospective candidates or parents  
who have questions not answered by the  
information in this catalog may write to:*

REGISTRAR  
United States Air Force Academy  
Colorado



## **Eligibility Requirements**

To be eligible for a cadet appointment to the class entering the Academy on 29 June 1964, a young man must meet the following basic requirements:

### ***Age***

He must be at least 17 and not have passed his 22nd birthday on 1 July 1964.

### ***Citizenship***

He must be a citizen of the United States.

### ***Character***

He must have good moral character.

### ***Marital Status***

He must be unmarried and never have been married. (Any cadet who marries will be discharged from the Academy.)

### ***Medical Standards***

He must be in good physical condition and have none of the disqualifying defects listed on pages 38-41 of the catalog.

He must have all dental defects and other remediable defects corrected prior to admission.

*A candidate is urged to see his private doctor and dentist for a preliminary check-up.*

## AUTHORIZED STRENGTH OF THE AIR FORCE ACADEMY CADET WING

The nominating sources are allocated a total number of cadets at the Academy at any one time as shown below. Approximately one-fourth of the vacancies become available each year.

Source of Nomination	Number
100 United States Senators (4 each)	400
435 United States Representatives (4 each)	1,740
District of Columbia	6
Puerto Rico	4
Canal Zone	2
Presidential	89
Vice-Presidential	3
Regular Components	90
Reserve Components	90
Sons of Deceased Veterans	40
Honor Military and Naval Preparatory Schools	40
America Samoa, Guam, or the Virgin Islands	1
Sons of Medal of Honor Winners	Unlimited
Qualified Alternates	*
Total	2,505

### *Allied Students*

Republic of the Philippines	4
American Republics	20
Total	24

---

*\*Number of available vacancies for qualified alternates is the difference between the total authorized strength and the number of cadets filling vacancies specifically allocated by law.*

## Definition of Terms

*Applicant* — One who makes application to a Member of Congress or other nominating authority for appointment to the Air Force Academy.

*Nomination* — Submission to Air Force Headquarters of an applicant's name as a nominee for appointment consideration.

*Candidate* — A nominee whose name has been forwarded to the Academy Director of Admissions and recorded as an official candidate.

*Qualified Candidate* — A candidate who meets the minimum requirements on the entrance examinations and fulfills the other criteria for appointment.

*Appointment* — Official designation of a qualified candidate selected for admission to the Academy, subject to approval of the Secretary of the Air Force and the President.

*Cadet* — A candidate who has accepted the appointment, has entered the Academy, and has been sworn in as a cadet.

## Application Procedures

### *Nomination Requirements*

A young man who desires an appointment to the Air Force Academy must first apply for and obtain a nomination in at least one of the following categories:

*Congressional* — Open to residents of the 50 states.

*District of Columbia and Possessions* — Open to residents of the District of Columbia, the Canal Zone, the Commonwealth of Puerto Rico, American Samoa, Guam, and the Virgin Islands.

*Presidential* — Open to sons of active, retired or deceased members of the Regular components of the armed forces.

*Vice Presidential* — Open to residents of the United States at large.

*Regular and Reserve Components* — Open to members of the Regular and Reserve components of the Air Force and Army.



*Sons of Deceased Veterans* — Open to sons of veterans who were killed in action or died as a result of injury or disease incurred or aggravated by active service during time of war.

*Honor Military and Naval Preparatory Schools* — Open to honor graduates or prospective honor graduates of certain designated honor military and honor naval schools.

*Sons of Congressional Medal of Honor Winners* — Open to sons of persons to whom the Medal of Honor has been awarded for an act performed while in the armed forces.

*Allied Students* — Open to citizens of the American Republics and the Philippines.

These categories are described thoroughly in this chapter under the section entitled Nominating Categories. All of the nominating sources are established by law, and no one can take the entrance examinations and be considered for an appointment to the Academy unless officially nominated as a candidate.

An applicant should study the nominating categories to determine what kind or kinds of nomination he is eligible to seek. Since specific cadet vacancies are allocated to each nominating category, an applicant may improve his chances of selection by applying in all the categories for which he is eligible. Only one series of entrance examinations is required for candidates entered in more than one nominating category.

### ***Previous Candidates***

A candidate who failed to receive an appointment in a previous year may become a candidate again by obtaining a nomination from one of the appropriate authorities. Application procedures are the same as for a new candidate. Previous candidates will receive special instructions regarding forms to be submitted. The status of previous candidates may vary considerably, but generally they will not be expected to accomplish everything required of new candidates. However, they will be required to complete all entrance examinations.

### ***How to Apply***

There are no special application forms issued to prospective candidates, and the Academy should not be contacted to furnish such forms. A regular business type letter is all that is required to

apply for most nominations. Exceptions are Regular and Reserve component applicants who must complete the standard form available from their unit commanders. Sample letters for requesting a nomination in Congressional, Presidential, and Sons of Deceased Veterans categories appear at the close of this chapter.

The Nominating Categories section contains instructions on how to apply in each category. An applicant should give all the information requested to establish that he is qualified in the category for which he is applying. He should address the application to the proper authority to insure that it is received without delay.

### ***Documentary Evidence***

*Name Changes* — A candidate must use his correct legal name as it appears on his birth certificate. If he desires to use a different name, he must notify the Director of Admissions immediately and provide evidence of legal authority for the name he desires to use. Until the appropriate documents are received, his name will be entered in the records as it appears on his birth certificate. Should he be appointed a cadet, he will be sworn in under his birth certificate name unless acceptable documents are received to substantiate a name change.

*For Minor Variations* — A notarized statement by a candidate's parents or guardian will be sufficient legal authority to use a name only slightly different from the one on the birth certificate. The statement should explain the discrepancy and certify that the individual known by the two names is one and the same person. This procedure is acceptable for correcting misspelling of names or for adding or deleting first or middle name, first or middle initial or the suffixes "Jr," "II," or similar designation.

*For Major Variations* — A civil court order or decree effecting the desired name change must be provided.

*Birth Certificate* — A candidate must submit a copy of his legal birth certificate to the Director of Admissions as soon as possible. Baptismal or hospital certificates are not acceptable. An authenticated true copy of the original record of birth will be acceptable.

*Naturalized Citizens* — If a candidate received United States citizenship by naturalization, he must submit a statement from a notary public indicating that he has seen the certificate. Included in the notary's statement should be the certificate of citizenship number, court name and location, date of certificate, and the candidate's full name, place and date of birth as they appear on the certificate. The original naturalization certificate should not be sent to the Academy.

*Claiming Citizenship Through Parent or Parents* — If a candidate was born to United States citizens while outside of the United States, he must submit a statement from a notary public confirming his certificate of citizenship number, date of certificate, and the candidate's full name, place and date of birth as they appear on the certificate. The original certificate should not be sent to the Academy. (A certificate of citizenship may be secured from the Immigration and Naturalization Service. Completion is required of an "Application for Certificate of Citizenship," Form N-600.)

### ***Congressional Applications***

Congressional applications must be made well in advance of admission. A young man who desires to enter the Academy upon graduation from high school should apply to his Senator or Representative as early as the spring of his junior year. If he obtains an appointment, he will enter in June of the following year. Though graduation from high school is not absolutely necessary for admission to the Academy, it is strongly recommended that an applicant complete his high school education before entering.

Each Member of Congress may submit the names of six young men as nominees to the Air Force Academy for each appointment vacancy available to him. They are permitted to submit nominations to the Academy any time between 1 June 1963 and 31 January 1964 for the class entering in June 1964. A majority of the Senators and Representatives make their nominations early in this period. For that reason, it is important to apply for a Congressional nomination during the spring or early summer if possible. A young man who waits until the fall or winter months to apply will not be considered if his Congressman has already selected his quota of nominees.



Other nominating authorities must also submit nominations to the Academy between 1 June and 31 January. Individuals applying in service-connected categories must submit applications to the Academy Director of Admissions before 30 November.

### ***Congressional Requirements***

Most Senators and Representatives require their applicants to take a Civil Service examination as a measure of general knowledge. Ordinarily the examination is given to applicants in July and November. The Academy does not have access to the results of this examination and does not advise prospective candidates on how to prepare for it. The Civil Service examination usually consists of questions pertaining to spatial relations, vocabulary and reading, and algebra. Any request for information regarding this examination should be directed to the Member of Congress.

Members of Congress may authorize an Air Force medical examination for a prospective candidate prior to nomination. However, in order for such an examination to be considered a final qualifying medical for admission to the Academy, it must be administered at one of the Air Force Academy Examining Centers between 1 July 1963 and the date of entrance into the Academy. A medical examination given at any installation other than an Air Force Academy Examining Center, or which is given prior to the 12-month period immediately preceding the date of entrance, will not be considered a final physical examination and will not be binding in any way upon the Air Force as a qualifying medical.

### ***Assistance from Liaison Officers***

A group of Air Force Reserve officers not on active duty, who are located in communities throughout the United States, act in an official capacity as Liaison Officers for the Academy. It is the duty of a Liaison Officer to provide information to young men and their parents concerning admissions procedures and cadet life. A prospective candidate who desires to talk with the Liaison Officer nearest to him may be able to obtain his name and address from the guidance counselor at his high school. If it is not available, he may request this information by writing to the Registrar, United States Air Force Academy, Colorado.

## Nominating Methods

### *Congressional*

A Member of Congress may choose between two methods of nomination as follows:

#### 1. *Principal-Alternate Method*

He may nominate one principal candidate and five alternate candidates listed in order of his preference. If the principal candidate meets the eligibility criteria and qualifies on the entrance examinations, he will be offered the appointment. If the principal does not meet the minimum requirements, the next designated alternate candidate who qualifies will be chosen.

#### 2. *Competitive Method*

He may nominate six candidates and authorize the Air Force Academy to select his best qualified candidate. A composite score will be determined for each qualified candidate. The composite score will include all entrance examination scores, ratings on previous academic achievement and extracurricular activities, and a rating based primarily upon the recommendations of school principals and teachers. The candidate having the highest composite score will be offered the appointment.

### *Other Categories*

The choice between the principal-alternate method and the competitive method is also available to the following nominating authorities: the Vice President of the United States, the Resident Commissioner of Puerto Rico, the Governor of the Canal Zone, and the Commissioners of the District of Columbia. Each nominating authority may name six candidates to be considered for each vacancy which becomes available during a year.

The Governors of American Samoa, Guam, and the Virgin Islands may each nominate four candidates. These twelve candidates will be considered on a competitive basis for any existing vacancy.

Candidates will be selected for appointment on a competitive basis from nominees entered in the following categories: Presidential, Sons of Deceased Veterans, Regular and Reserve Components, and Honor Military and Naval Preparatory Schools. Factors considered in the competition are all entrance examination scores,

previous academic achievement, extracurricular activities, and recommendations of school principals and teachers. There is no limit on the number of eligible candidates who may compete in the Presidential and Sons of Deceased Veterans categories. Regular and Reserve nominations are limited to three for each vacancy. Each honor military and naval school may name three candidates.

The Son of a Congressional Medal of Honor Winner will be nominated upon application to the Academy. He will be offered an appointment provided he qualifies on the entrance requirements.

## **Nominating Categories**

### ***Congressional***

Any resident of the 50 states who meets the Academy eligibility requirements may apply for a Congressional nomination. The applicant must make his request directly to a United States Senator from his state or to a United States Representative from his Congressional district. A sample letter of application is included on page 42 of the catalog for guidance to the applicant.

### ***District of Columbia***

Residents of the District of Columbia should apply for an Academy nomination to one of the Commissioners of the District. A letter requesting nomination from a Commissioner should contain the same information required of a Congressional applicant.

### ***The Canal Zone, The Commonwealth of Puerto Rico, American Samoa, Guam and The Virgin Islands***

Residents of the Canal Zone, American Samoa, Guam and the Virgin Islands should apply to their respective Governor for nomination. Residents of Puerto Rico should apply to the Resident Commissioner of Puerto Rico. A letter of application to one of these nominating authorities should contain the same information required of a Congressional applicant.

### ***Presidential***

Vacancies allocated to the President of the United States have been reserved by him for sons of members of the Regular components



of the armed services (Air Force, Army, Navy, Marine Corps, and Coast Guard). The eligibility requirements specify that the Regular component member must be on active duty, retired, or deceased, but not discharged before retirement or death. The son of a member of the Reserve component is not eligible in this category, unless his parent received a Reserve commission or warrant while a member of a Regular component, remained on continuous extended active duty, and retained the right to revert to Regular status.

In order for an adopted son to qualify as a Presidential candidate, he must have been legally adopted before his fifteenth birthday or proceedings must have been started before that time. Proof of adoption should be submitted with the application.

To request a nomination in this category, an individual (not his parent) must submit his application to the Director of Admissions, United States Air Force Academy, Colorado, not later than 30 November 1963. A sample letter of application is included on page 43 of the catalog.

### ***Vice Presidential***

The Vice President may nominate candidates from the United States at large. A letter requesting nomination should be addressed to the Vice President and should contain the same information required of a Congressional applicant. The Vice President is authorized to have no more than three cadets at the Academy at any one time. Therefore, in some years no vacancy may be available in this category.

### ***Sons of Deceased Veterans***

Vacancies are available for sons of deceased veterans who were killed in action or died of wounds, injuries, or disease incurred in active service during World War I, World War II (7 December 1941 thru 31 December 1946), or the Korean conflict (27 June 1950 thru 31 January 1955).

To request a nomination in this category, an individual (not his parent) must submit his application to the Director of Admissions, United States Air Force Academy, Colorado, not later than 30 November 1963. A sample letter of application is included on page 44 of the catalog.

### ***Regular Components***

Vacancies are available for enlisted members of the Regular Air Force and the Regular Army. Candidates must have completed one full year of active Regular service by 1 July of the year admitted to the Academy. A candidate must be an active member of the Regular component when appointed to the Academy, but his year of required service time does not have to be continuous.<sup>1</sup>

### ***Reserve Components***

Vacancies are allotted for enlisted members of the Reserve components of the Air Force and the Army (Air Force Reserve, Army Reserve, Air National Guard, and Army National Guard). Candidates must have completed one full year of Reserve service by 1 July of the year admitted to the Academy. A candidate must be an active member of the Reserve component when appointed to the Academy, but his year of required service time does not have to be continuous.<sup>1</sup>

### ***Honor Military and Naval Preparatory Schools***

Vacancies are reserved for honor graduates of honor military and naval preparatory schools. The Departments of Air Force, Army, and Navy determine annually which schools will be designated as honor schools. Each school may nominate three candidates from its honor graduates or prospective honor graduates to compete for the cadet vacancies. The schools must submit their nominations to the Director of Admissions, United States Air Force Academy, Colorado, before 31 January 1964.

Each nomination must contain a certification by the head of the institution that the candidate was an honor graduate or is a prospective honor graduate during a year that the institution was designated an honor school.

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<sup>1</sup>A joint Air Force-Army regulation (AFR 53-10, AR 350-58, "Appointment to the United States Air Force Academy") gives complete directions for making application in this category. A prospective candidate must apply through his unit commander, who will process his application and forward it to the Director of Admissions for a determination of eligibility. The application form (DD Form 786) should be obtained through normal publications supply channels at the military organization where the individual is assigned. Applications for both Regular and Reserve components must be submitted prior to 30 November 1963.

### ***Sons of Congressional Medal of Honor Winners***

The son of a Congressional Medal of Honor winner who served in any branch of the armed services may apply for a nomination in this category. If an applicant meets the eligibility criteria and qualifies on the entrance examinations, he will be admitted to the Academy. Vacancies are not limited in this category.

An applicant must write to the Director of Admissions, United States Air Force Academy, Colorado, requesting a nomination in this category. The letter must be submitted prior to 30 November 1963 and must include the following:

1. Full name, address, and date of birth.
2. Date of high school graduation.
3. Rank, service number, organization, and station, if a member of the military service.
4. Full name, rank, service number, and branch of service of the parent to whom the Medal of Honor was awarded.

### ***Qualified Alternate Candidates***

When necessary, the Air Force Academy Board may recommend qualified alternate candidates for appointment in whatever number may be required to bring the Cadet Wing to its authorized strength. Thus a young man nominated by a Member of Congress, but not appointed to fill his district vacancy, may still be considered on a competitive basis for the Academy if he is qualified. All qualified alternate candidates will be considered and no application by the individual is necessary.

### ***Allied Students***

The Academy is authorized to provide instruction to as many as 20 young men at one time from the American Republics other than the United States. Not more than three students from any one republic may receive instruction at the same time. In addition, the President of the Republic of the Philippines may fill one vacancy in each entering class. To apply for an Academy nomination, a young man should write to the Government of his own country, not to the Academy or other United States Government offices. An applicant's letter to his Government should contain complete particulars about his background. The letter should be submitted at least a year prior to the time of desired admission to the Academy. *Allied students*



*must be able to read, write, and speak English proficiently in addition to meeting the eligibility requirements established for all Academy candidates.* With the exception of the American Republics and the Philippines, a student from a foreign country may not be admitted to the Air Force Academy unless he has received specific authorization by legislation of the United States Congress.

## **Examinations**

### ***Air Force Examinations***

A candidate will be scheduled to take the Air Force Academy Qualifying Medical Examination and the Physical Aptitude Examination at the Air Force Academy and Aircrew Examining Center nearest to him. A candidate who has a Qualifying Medical Examination on file taken since 1 July 1963 will be required to take only the Physical Aptitude Examination.

The Director of Admissions will send an authorization letter to the candidate specifying the date and place to report for these examinations. Therefore, it is extremely important that a candidate notify the Director of Admissions immediately of any change of address. This applies to both his permanent home address and his temporary or school address. Failure to provide this information will result in considerable inconvenience to a candidate and may jeopardize his candidacy.

If the candidate cannot report at the time specified, he may request a change in the testing date. The request should be submitted at least three weeks prior to the scheduled testing date, unless special circumstances are involved which make this impossible. In his request the candidate should specify his first and second choices of preferable testing dates. All candidates will be contacted by the Examining Center concerning the time to report.

In the United States, tests will be scheduled on 2 and 9 December 1963, and in 1964 on 27 January; 3, 10, 17, and 24 February; and 2, 9, and 16 March.

Testing overseas will be scheduled on 9 December 1963 and 9 March 1964. It may be necessary to schedule some overseas candidates for 24 February if the capacity of an Air Force Academy

Examining Center will not permit all candidates to be examined in December and March.

A candidate living in a remote area overseas may not be able to take the College Board tests in his home community. In this case, the candidate should register for the College Board tests at a location nearest to the Examining Center where he will take his medical and physical examinations. These examinations will be administered near two College Board testing dates so that a candidate will be able to complete all tests during one trip. The College Board tests will be held on Saturday, 7 December and 7 March, previous to the Air Force examinations on Monday, 9 December and 9 March.

A list of Examining Centers is located on page 36 of the catalog. Travel expenses to the Examining Center must be paid by the candidate, unless he is a member of the armed services on active duty. Meals and living accommodations while at the Center will be provided at a nominal cost to the candidate. Approximately two days are required to complete the Qualifying Medical Examination and the Physical Aptitude Examination.

*The Air Force Academy Qualifying Medical Examination* measures a candidate's physical fitness for admission to the Academy.

Each candidate is advised to consult his private physician for a preliminary screening examination. The list of common medical disqualification factors on pages 38-41 of the catalog should be used as a guide. This list, while not complete, will serve to identify applicants who are obviously disqualified or who have remediable defects. Each candidate is advised to have all remediable defects corrected prior to taking the Qualifying Medical Examination. All decayed teeth revealed by visual or x-ray examination must be filled.

A waiver for vision or height will be considered and may be granted to a candidate whose records indicate outstanding academic or leadership aptitude and achievement. *Requests for waivers are not required since consideration will be automatic.* The decision will be based entirely upon level of attainment on scored selection measures.

*The Physical Aptitude Examination* includes a series of physical aptitude exercises designed to measure strength, coordination, endurance, speed, and agility. A list of specific test items is included on pages 37-38 of the catalog.

### ***College Entrance Examination Board Tests***

A candidate will be required to take the following College Entrance Examination Board tests:

#### **Scholastic Aptitude Test**

1. Verbal Section
2. Mathematics Section

#### **Achievement Tests**

1. Intermediate Mathematics or Advanced Mathematics  
(Select one)
2. English Composition
3. Any one additional achievement test of the candidate's choice (It may be the Writing Sample or any other test offered by the College Board.)

The Board publishes descriptive booklets entitled *A Description of the College Board Scholastic Aptitude Test* and *A Description of the College Board Achievement Tests*. Most secondary schools have a supply of these booklets. If a candidate is unable to obtain copies at his school, he may write to the nearest College Board office and request that the booklets be sent to him. (See next footnote for address.) There is no charge for the booklets. They describe all tests given during the current school year.

The College Entrance Examination Board will schedule the candidate to take the tests at a College Board center which the candidate chooses from a list included in the bulletin of information. The center may be located within the candidate's community or usually not more than 75 miles from his home.

The regular College Board testing dates for Academy candidates are 7 December 1963, 11 January 1964, and 7 March 1964. Candidates are encouraged to take the tests on one of those dates. If circumstances arise which make it impossible for a candidate to take the tests on any of those dates, he may submit a request to be scheduled on the make-up date of 28 March, the last possible time to take the tests. A letter containing his reason for requesting the make-up date should be sent to the Director of Admissions, United States Air Force Academy, Colorado.

The College Board tests on 28 March will be given only at Air Force Examining Centers. This means that a candidate might



be scheduled to take the tests at a center which is a considerable distance from his home. Therefore, each candidate should take the tests on one of the other dates if at all possible.

If a candidate has taken the College Board tests during the current school year, the scores he achieved will be accepted by the Academy, provided he writes the College Entrance Examination Board and asks that his scores be forwarded to the Director of Admissions.<sup>1</sup> However, a candidate is encouraged to take the tests more than once since he may improve on his previous scores. In the event he does take the tests more than once, each time he registers he *must* request that all of his scores be furnished by the College Board to the Air Force Academy. Only scores of tests taken during the current testing cycle will be considered.

The fee for one administration of the College Board tests will be paid by the Department of the Air Force. A free test voucher will be forwarded to the candidate along with his registration card for the College Board tests which is included with the bulletin of information. The candidate must mail both the test voucher and the registration card to the College Entrance Examination Board.

## Previous Academic Record

In addition to test scores, the Academy considers a candidate's previous academic record in judging his qualifications for a cadet appointment. His high school rank-in-class is the principal measure of academic achievement. The majority of young men appointed to the Academy rank in the top quarter of their graduating classes. A candidate graduating in the lower half of his high school class does not have a reasonable chance of receiving an appointment to the Academy without adequate preparation in college or other evidence that his rank-in-class is not representative of his true ability.

## Leadership Potential

A candidate's leadership potential is also considered an important part of his qualifications. This potential is evaluated by his

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<sup>1</sup>To request the College Board descriptive booklets or previous test scores the candidate should write to the College Entrance Examination Board either at Box 592, Princeton, N. J., or Box 27896, Los Angeles, Calif. Candidates who live in Montana, Wyoming, Colorado, New Mexico and states west should write to the Los Angeles office; others should write the New Jersey office.

participation and distinction in high school extracurricular activities and by the recommendations of his school principals and teachers. If two candidates are being considered with similar qualifications in the examinations and academic achievement, the one who has shown the greater leadership potential has the better chance of selection.

### **Admission Deposit and Travel Expenses**

Each cadet will be requested to deposit \$300 when admitted to the Academy. A cadet who finds it impossible to provide the full sum may deposit a smaller amount. The deposit will be credited to the cadet's account to help pay initial costs of uniforms issued to him on a charge basis after admission. Failure to make a deposit is no bar to admission. However, a cadet with no deposit will have his initial uniform costs deducted on a pro rata basis from his monthly pay of \$111.15. In order to meet necessary expenses and participate in normal activities, he must be extremely economical with his pay until the initial uniform costs have been deducted from his account. Each candidate selected for the Academy receives a copy of the *Cadet Budget* which includes information regarding the entrance deposit.

Except for a member of the armed forces who is provided transportation under joint travel regulations, each selected candidate is allowed six cents per mile for travel expenses to the Academy from his home in the United States or point of entry into the country. The allowance will be credited to his account following admission, unless he makes a specific request that the money be sent to his parents. If the allowance is credited to his account, the cadet may choose to apply the sum toward his entrance deposit.

### **Obligations of Cadet Appointment**

Upon admission each cadet will be required to sign an agreement, with the consent of his parents or guardian if a minor, that he will fulfill these obligations:

1. He will complete the course of instruction at the Air Force Academy.
2. He will accept an appointment and serve as a commissioned officer in a Regular component of one of the armed services for four years.

3. If authorized to resign from the Regular component before the sixth anniversary of his graduation, he will serve as a commissioned officer in the Reserve component until the sixth anniversary.
4. If discharged from the Air Force Academy before graduation, he will accept transfer to the Air Force Reserve, in an appropriate enlisted grade, to complete the six-year service obligation. (Participation in a college ROTC program will apply toward the Reserve commitment.)

The Department of Defense has established the four-year obligated tour for graduates of all service academies. Current Air Force policy requires that the four-year tour will begin upon the completion of basic flying training for Air Force Academy graduates who elect flight training. Academy graduates who do not enter flying training will begin their four-year tour immediately upon graduation.

Each cadet is required to take the following Oath of Allegiance: "I, \_\_\_\_\_(name), having been appointed an Air Force Cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So Help Me God."

## Summary

### *Steps of Congressional Nomination and Appointment*

1. An applicant must write to a United States Senator from his state or to a United States Representative from his Congressional district requesting nomination. He may follow the "Suggested Letter Format for Requesting a Congressional Nomination." The application should be submitted prior to 1 June, if possible, of the year preceding admission.
2. The Member of Congress will reply to the application. He may require mental or physical screening prior to making his nominations.
3. An applicant who is chosen for nomination will ordinarily receive a notice from his Senator or Representative prior to



official notification by the Academy Director of Admissions. The Academy does not send official notification until after the Congressman has submitted the nomination.

4. As soon as possible following the notification, the Director of Admissions will send an instruction kit to the candidate which includes: (a) An authorization letter showing the time and place to report for the Air Force examinations. (b) A test registration card and free test voucher which the candidate must mail to the College Entrance Examination Board to be scheduled for the College Board tests. (c) Forms which the candidate must submit. (d) A booklet of instructions to be used as a guide in completing forms and taking the entrance examinations.
5. A candidate takes the Air Force examinations at an Air Force Examining Center for two days as scheduled between December and March. A candidate takes the College Board tests on one of the scheduled dates: 7 December, 11 January, or 7 March, or with sufficient reason may postpone to 28 March.
6. Based upon their qualifications and examination scores, candidates are recommended for appointment by the Academy Board. The appointments are subject to approval of the Secretary of the Air Force and the President. Candidates selected for the cadet class will receive notification in May. The class enters on 29 June 1964.



## U. S. AIR FORCE ACADEMY AND AIRCREW EXAMINING CENTERS

### *Alabama*

Maxwell AFB, Montgomery

### *Alaska*

Elmendorf AFB, Anchorage

### *Arizona*

Davis-Monthan AFB, Tucson

### *California*

March AFB, Riverside

Travis AFB, Fairfield

### *Colorado*

Lowry AFB, Denver

### *District of Columbia*

Bolling AFB, Washington

### *Florida*

MacDill AFB, Tampa

### *Georgia*

Hunter AFB, Savannah

### *Hawaii*

Hickam AFB, Honolulu

### *Illinois*

Chanute AFB, Rantoul

Scott AFB, Belleville

### *Louisiana*

Barksdale AFB, Shreveport

### *Massachusetts*

Otis AFB, Falmouth

Westover AFB, Chicopee Falls

### *Michigan*

Selfridge AFB, Mt. Clemens

### *Mississippi*

Keesler AFB, Biloxi

### *Montana*

Malmstrom AFB, Great Falls

### *Nebraska*

Offutt AFB, Omaha

### *New Jersey*

McGuire AFB, Wrightstown

### *New Mexico*

Walker AFB, Roswell

### *New York*

Griffis AFB, Rome

Stewart AFB, Newburgh

### *Ohio*

Lockbourne AFB, Columbus

Wright-Patterson AFB, Dayton

### *Oklahoma*

Tinker AFB, Oklahoma City

### *Pennsylvania*

Olmsted AFB, Middletown

### *South Carolina*

Shaw AFB, Sumter

### *South Dakota*

Ellsworth AFB, Rapid City

### *Tennessee*

Sewart AFB, Smyrna

### *Texas*

James Connally AFB, Waco

Randolph AFB, San Antonio

Sheppard AFB, Wichita Falls

### *Utah*

Hill AFB, Ogden

### *Virginia*

Langley AFB, Hampton

### *Washington*

Fairchild AFB, Spokane

McCord AFB, Tacoma

### *American Samoa*

Department of Medical Services

Pago Pago, Tutuila

### *Canal Zone*

Albrook AFB, Balboa

### *England*

South Ruislip AS, Middlesex

### *Germany*

Wiesbaden AB, Wiesbaden

### *Guam*

Andersen AFB, Guam

### *Japan*

Tachikawa AB, Tachikawa

### *Newfoundland*

Ernest Harmon AFB,

Stephenville

### *Philippine Islands*

Clark AB, Luzon

### *Puerto Rico*

Ramey AFB, Aguadilla

## PHYSICAL APTITUDE EXAMINATION: SPECIFIC REQUIREMENTS

The items to be included in this examination will normally be selected from those listed below. The standard of performance indicated for each item is considered as the minimum performance to be achieved by each candidate. However, the examination will be graded on the basis of the total score. Therefore, if a passing score is achieved on the whole examination, failure to achieve a passing score on any single test will not cause disqualification.

1. *Modified basketball throw* . . . 48 feet  
A throw for distance from a kneeling position using a regulation basketball.
2. *Broad jump for distance, standing* . . . 6 feet 9 inches
3. *Broad jump for distance, three in succession* . . . 21½ feet  
Standing start with 3 successive broad jumps.
4. *Instep touch* . . . 3 times  
From a hanging position on a horizontal bar, grasping bar with palms away from the face, bringing insteps to a position where they touch the bar. (Knees may be bent if desired.)
5. *Dodge run* . . . 26 seconds  
A run through a maze placed on the gymnasium floor.
6. *Basketball passing* . . . 30 times  
Using a two-handed chest pass, be able to hit a 6-inch square target from 20 feet away 30 times in succession.
7. *Hurdle run* . . . 40 seconds  
A run through a maze of hurdles placed on the gymnasium floor.
8. *Medicine ball put* . . . 32 feet  
A 6-pound medicine ball is put, using the same movement as required for a shotput.
9. *Pullups* . . . 3 times  
Chinning oneself on a horizontal bar, grasping bar with palms away from face.
10. *Pushups* . . . 20 times  
Standard pushups, starting from the leaning rest position.
11. *Rope climb* . . . 10½ feet  
Climb a regulation gymnasium rope as high as possible in 7



seconds, using hands and feet or hands alone, starting from a standing position.

12. *Shuttle run* . . . 250 yards (52 seconds), 300 yards (65 seconds)  
A shuttle run on a gymnasium floor between two turning blocks 25 yards apart.
13. *Vertical jump* . . . 17 inches  
The difference between the height an individual can reach and the height he can jump and reach.
14. *Sit-ups* . . . 30 times in 2 minutes  
Forearms must touch mat after each sit-up.

## **COMMON MEDICAL REASONS FOR DISQUALIFICATION OF AIR FORCE ACADEMY CANDIDATES**

Listed in the following paragraphs are many of the factors for which Air Force Academy candidates are medically disqualified. This list is not complete, but will serve as a guide to private physicians and dentists in a preliminary screening examination.

### ***Visual Disqualifications***

Unaided visual acuity less than 20/20 in either eye. Myopic refractive error exceeding  $- .25$  in any one meridian or a hyperopic refractive error exceeding  $+ 1.75$  diopters in any one meridian. Deficient color vision. Astigmatism greater than  $\pm .75$ . A cycloplegic examination is required of all applicants who take the final qualifying examination. Any tropia. Esophoria greater than 10 prism diopters, exophoria greater than 5 prism diopters. Hyperphoria greater than 1 prism diopter. A satisfactory red lens test should be performed.

### ***Hearing Disqualifications***

Hearing which is not 15/15 bilaterally or better by whispered voice test. Existing perforations of the tympanic membrane, regardless of etiology. Existing chronic ear disease is cause for rejection.

### ***Heart and Vascular System***

Systolic blood pressure greater than 139 and diastolic blood pressure greater than 89. Heart rate greater than 100 on repeated exami-

nation. All valvular diseases of the heart. Persistent bradycardia less than 50. History of rheumatic fever within five years. Varicose veins if severe or symptomatic. History of paroxysmal tachycardia.

### ***Height Disqualifications***

Under 5'6" and over 6'8". (Under 5'5" for 17- or 18-year olds.)

### ***Weight Disqualifications***

Any evidence of gross over or underweight.

### ***Abdomen Disqualifications***

Weakness of abdominal wall sufficient to interfere with function. Hernias of any type until corrected. Chronic diseases of abdominal viscera. Gastric or duodenal ulcer or history of same. Abdominal fistulae. History of splenectomy for reason other than trauma.

### ***Lung and Chest Disqualifications***

Tuberculosis active in past 5 years. Spontaneous pneumothorax within past 3 years or history of repeated episodes. Chronic bronchitis that will not respond to treatment. Bronchiectasis. Asthma of any degree since age 12. Congenital malformations that result in reduced chest capacity with associated diminution of respiratory reserve, absence of the clavicle, ununited fractures of the clavicle that would interfere with carrying military equipment. Coccidioidomycosis unless healed without residual.

### ***Genitourinary Disqualifications***

Varicocele if large or painful until corrected. Absence of one kidney. Chronic kidney disease. Infantile genitalia. Undescended testicle. Repeated attacks of renal calculi. Atrophy or absence of both testicles. Chronic orchitis or epididymitis. Persistent albuminuria of any type. Hypospadias or epispadias.

### ***Extremities Disqualifications***

Ununited fractures. Old joint fractures with evidence of arthritis. Pes planus with marked eversion and symptoms. Other conditions of the feet that would interfere with successful compliance with military routine. Chronic bone or joint disease. History of derangement of knee joint not corrected by surgery if associated with

symptoms during past year. Varices below the knee if associated with ulcers or scars from previous ulceration. Total loss of either thumb. Loss of other digits sufficient to interfere with function and loss of either great toe.

### ***Spine and Musculoskeletal Disqualifications***

Scoliosis of more than one inch. Old vertebral fractures. Curvature of the spine of any degree in which there is noticeable deformity when the candidate is dressed. Spondylolisthesis. Gout. Deficient muscular development. Tuberculosis of spine, active or healed.

### ***Skin Disqualifications***

Chronic skin diseases such as severe acne or eczema or unsightly congenital markings. Pilonidal cyst if evidenced by presence of mass or discharging sinus. Extensive deep or adherent scars that interfere with movement or wearing of military equipment.

### ***Neurologic Evaluations***

Head injury resulting in prolonged unconsciousness or neurological diseases of any kind will be carefully evaluated. Migraine. Degenerative disorders. Residuals of infection (polio, meningitis, etc.). Convulsive disorders. Miscellaneous disorders, tics, spasms, spina bifida, if associated with neurological manifestations. Amnesia unless shorter than four hours in duration. History of unexplained unconsciousness.

### ***Psychiatric Evaluations***

Emotional instability. Psychosis or history of same. Anxiety reaction or dissociative reaction. Pathologic personality types. Other obsessive compulsive reactions or neurotic depressive reaction. Addiction to alcohol or drugs. Antisocial personality. Sexual deviation. Immaturity reaction if marked degree. Situational maladjustment. Multiple instances of somnambulism after 10 years. History of attempted suicide. Other disorders of emotion, behavior, thought, intelligence, or mood, difficult to define, may be disqualifying.

### ***Nasal Disqualifications***

Any congenital or acquired lesion which interferes with the functions of the nasopharynx or eustachian tubes. Allergic rhinitis. Nasal polyps. Deviation of the nasal septum resulting in greater than



50% obstruction to either airway or obstruction to drainage of any sinus. Sinusitis of any degree.

### ***Dental Disqualifications***

Less than eight serviceably opposed natural teeth in each of the upper and lower arches, exclusive of third molars, so positioned as to retain and adequately stabilize fixed bridges or partial dentures. Missing teeth, or grossly disfiguring spaces in anterior areas which adversely affect personal appearances. Severe malocclusion of the teeth or malrelation of the jaws sufficient to adversely affect the individual's health or appearance. Active orthodontic appliances whether attached or removable. Retainers are permissible after all treatment has been satisfactorily completed. Dental defects such as carious teeth, defective restorations, defective fixed or removable prosthesis until corrected. Diseases of the jaws such as cysts, tumors, severe periodontol conditions, abscessed teeth, which are irremediable or not easily remedied that are likely to incapacitate individual for satisfactory performance of military duty.



## SUGGESTED LETTER FORMAT FOR REQUESTING A CONGRESSIONAL NOMINATION

Date

Honorable.....  
House of Representatives  
Washington 25, D. C.

OR

Honorable.....  
United States Senate  
Washington 25, D. C.

Dear Mr.....:

Dear Senator.....:

It is my desire to attend the Air Force Academy and to make the United States Air Force my career. I respectfully request that I be considered as one of your nominees for the class that enters the Academy in June 1964.

The following personal data is furnished for your information:

Name: (*As recorded on birth certificate.*)

Address: (*City, County, State.*)

Parents' Name:

Date of Birth:

High School Attended:

Date of High School Graduation:

Approximate Grade Average:

I have been active in high school extracurricular activities shown on the attached list.

I shall greatly appreciate your consideration of my request for a nomination to the Air Force Academy.

Sincerely,

Signature

## SUGGESTED LETTER FORMAT FOR REQUESTING A PRESIDENTIAL NOMINATION

Date

Director of Admissions  
USAF Academy, Colorado

Dear Sir:

I request a nomination under the Presidential category for the class that enters the Academy in June 1964 and submit the following data:

Name: *(Give name as shown on birth certificate. If different from that which you use, attach a copy of court order, if applicable.)*

Address: *(Give permanent and temporary addresses.)*

Date and Place of Birth: *(Spell out month.)*

Date of High School Graduation:

If Member of Military: *(List rank, serial number, component, branch of service, and organizational address — do not use CMR or Box No.)*

If Previous Candidate: *(List year and candidate number.)*

### ***Information on Parent***

Name, Rank, Serial Number, Component and Branch of Service:

Organizational Address:

Retired or Deceased: *(Give date and attach copy of retirement orders or casualty report.)*

Officer Personnel: *(Attach Statement of Service prepared by personnel officer specifying Regular or Reserve status for all periods of service.)*

Enlisted Personnel: *(Attach statement prepared by personnel officer listing date of enlistment, date of enlistment expiration, component and branch of service.)*

Sincerely,

Signature

## SUGGESTED LETTER FORMAT FOR REQUESTING A SON OF DECEASED VETERAN NOMINATION

Date

Director of Admissions  
USAF Academy, Colorado

Dear Sir:

I request a nomination under the Sons of Deceased Veterans category for the class that enters the Academy in June 1964 and submit the following data:

Name: *(Give name as shown on birth certificate. If different from that which you use, attach a copy of court order, if applicable.)*

Address: *(Give permanent and temporary addresses.)*

Date and Place of Birth: *(Spell out month.)*

Date of High School Graduation:

If Member of Military: *(List rank, serial number, component, branch of service, and organizational address — do not use CMR or Box No.)*

If Previous Candidate: *(List year and candidate number.)*

### ***Information on Parent***

Name, Rank, Serial Number, Regular or Reserve Component and Branch of Service:

Date and Place of Death:

Cause of Death:

Veterans Administration XC Claim Number: *(Forwarding a copy of Death Certificate, preferably the Casualty Report, will expedite processing of your application.)*

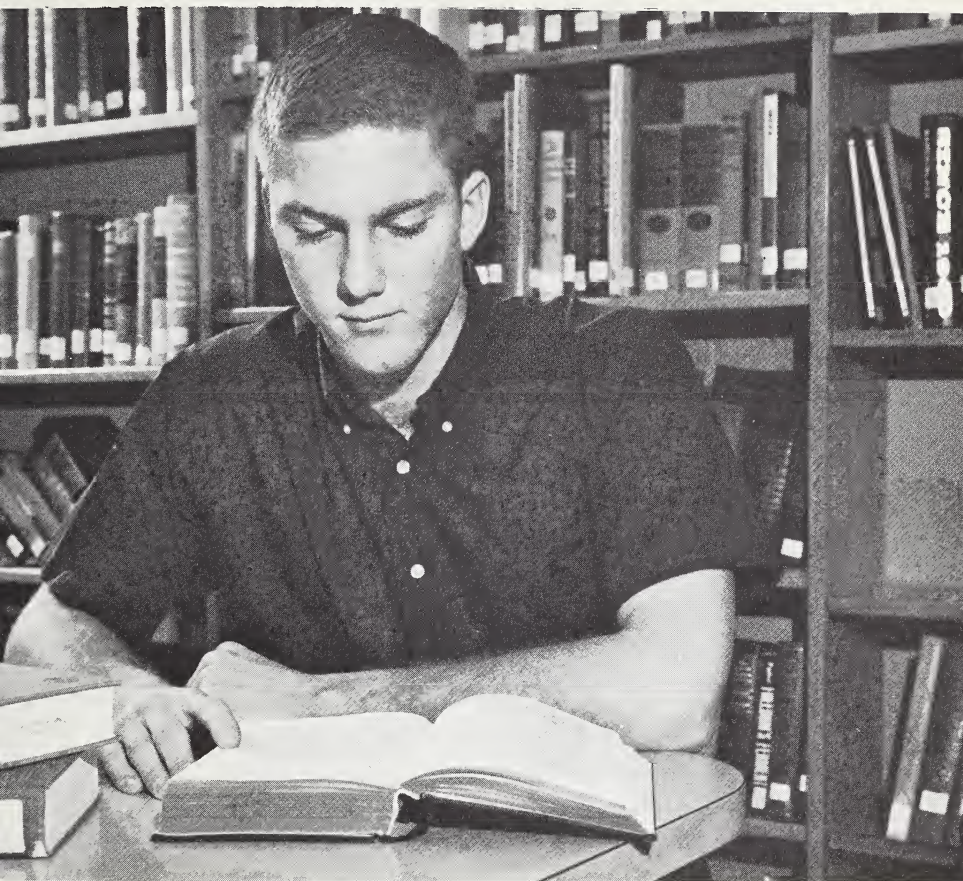
Address of VA Office Where Case Is Filed:

Sincerely,

Signature



# Preparation



## Preparation Guide for Candidates

### *Previous Education*

The majority of young men admitted to the Air Force Academy enter immediately after graduation from high school. Those who feel that they need additional academic preparation, or who were unable to obtain appointment immediately upon graduation, are encouraged to attend a civilian college or university while waiting to try for a subsequent class. There are many fine institutions of higher learning throughout the country. However, the Academy does not attempt to recommend specific schools for preparation.

### ***Transfer Credit or Validation***

College credits may be transferred to the Air Force Academy if the courses correspond to those in the Academy curriculum and an acceptable grade level has been achieved. Credit for college level courses completed in secondary or preparatory schools may be given if the cadet can demonstrate an acceptable level of achievement in courses corresponding to those at the Academy. One way of demonstrating achievement is through the College Entrance Examination Board advanced placement tests.<sup>1</sup> The Academy Registrar, with approval of appropriate department heads, will consider advanced placement test scores. The College Board advanced placement courses provide an excellent means of preparing for the Academy curriculum.

Young men who are preparing for the Academy should plan to transfer credit or validate courses whenever possible. Cadets who have done so will be able to complete their prescribed courses sooner than they would otherwise. In this way they will have more time to take electives, major in a subject area, and prepare for post-graduate study. It is anticipated that a number of Academy graduates will be selected for advanced study early in their careers.

No matter how many courses a cadet may validate or transfer, he must enter as a Fourth Classman and spend four years at the Academy.

### ***Academic Preparation***

The College Board tests measure a candidate's potential for success in the cadet academic program of liberal arts and science studies. For adequate academic preparation in high school, a young man should definitely take the following subjects and strive for better than average grades in his class work:

English — 4 units

Intermediate Mathematics — 4 units (Studies should include first-year algebra, intermediate algebra, trigonometry, and plane geometry.)

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<sup>1</sup>The advanced placement tests are administered in May of each year at College Board examining centers throughout the country. Registration in advance, including payment of fee, is necessary. Information on registration procedures, fees, testing dates, and examining centers is contained in the bulletin, *Advanced Placement Examinations*, available without charge. This bulletin may be obtained by writing to the College Board Advanced Placement Examinations at one of the following addresses: Box 592, Princeton, N. J., or Box 27896, Los Angeles 27, Calif.

The following subject areas are recommended as an additional background for the academic program. A prospective candidate should try to take as many courses as possible which embrace these areas in the sciences, social sciences, and humanities.

*Sciences*

Biology  
General Science  
Chemistry  
Physics  
Advanced Mathematics  
Mechanical Drawing

*Social Sciences and Humanities*

Economics  
American Government  
American History  
World History  
World Geography  
Psychology  
Foreign Languages  
Public Speaking

Typing is recommended in addition to the above high school courses. Typewriters are available to the cadets for typing themes and reports.

Each cadet at the Academy is required to take courses in one foreign language, either German, Chinese, Spanish, French or Russian. A student preparing for the Academy should select one of these languages and take as many years of instruction in it as possible in high school. Three years of language instruction in high school is considered desirable for adequate preparation.

The Academy does not require specific school courses or credits for entrance. A candidate does not have to be a high school graduate to gain admittance. However, one who has not graduated from high school at the time of admission to the Academy may lack the proper background to accomplish the cadet program of education and training.

High school students preparing for the Academy must remain in the upper half of their high school class in grade average or they may not qualify for admission to the Academy without further preparation in college or preparatory school. The Academy curriculum is on the level of difficulty with the nation's engineering schools. The proper academic background is essential, therefore, in order to complete the concentrated program of education.

It should be noted by young men interested in applying for the Academy that the curriculum is not designed to prepare a student for medicine, dentistry, law or theology. One who desires to enter such professions should not apply for appointment.

### ***Physical Preparation***

All young men who are preparing for the Academy should maintain a high degree of physical fitness through participation in sports and through proper care of health. There is a definite correlation between physical fitness and the ability to succeed in the Academy's program of cadet education and leadership training.

A physical aptitude examination is given to each candidate to measure his coordination, strength, and agility. Candidates may prepare for this examination by engaging regularly in vigorous physical activity.

A cadet's first two months at the Academy are devoted to a strenuous physical program of basic cadet training. Physical exertion is required from morning until night as the cadet goes through physical conditioning and military training. Those cadets who have conditioned themselves to the level required for vigorous athletic team sports will be better prepared to meet the physical demands. Each candidate is encouraged to practice strenuous conditioning exercises until many repetitions of the exercise can be accomplished without undue physical strain. Legs, arm and shoulder strength should receive special emphasis.

### ***Leadership Preparation***

All phases of the Academy curriculum are devoted to preparing the cadet for leadership in the Air Force. Active participation in high school extracurricular activities can provide valuable experience in preparing for positions of leadership responsibility.

Young men who desire to enter the Academy should participate in some extracurricular activities which develop leadership skills. These may include both athletic and non-athletic activities. Some examples of leadership in extracurricular activities are as follows:

1. Presiding officers of classes, clubs or student government.
2. Athletic participation and achievement.
3. Meritorious awards in athletic or non-athletic activities.
4. Attaining Eagle Scout rank.
5. Officer rank in the Reserve Officer Training Corps.
6. Managerial offices such as editor of a school paper.
7. Participation in public speaking activities.
8. Participation and achievement in the Civil Air Patrol.



## **Preparatory Scholarships**

Three non-profit agencies, the Falcon Foundation, the Gertrude Skelly Trust, and the General Henry H. Arnold Educational Fund, provide educational assistance programs to enable deserving young men to better qualify for admission to the Air Force Academy. These agencies have no official connection with the United States Air Force or the Air Force Academy. Neither do they have any connection with the Air Force Academy Foundation which raises funds to provide recreational and cultural facilities for the Academy.

### ***The Falcon Foundation***

The Falcon Foundation provides preparatory scholarships annually for highly motivated and qualified young men seeking admission to the Academy and a lifetime career in the Air Force. The scholarships are awarded to a limited number of deserving young men who need financial assistance to achieve preparatory schooling.

The Foundation makes annual cash grants for these scholarships to specific preparatory schools in various parts of the nation. Application for scholarships and information concerning the schools must be made directly to the Falcon Foundation, Post Office Box 611, Dallas, Texas. Completed applications must be provided to the Foundation by 1 April each year.

### ***The Gertrude Skelly Trust***

The late Mrs. Gertrude Skelly of Tulsa, Oklahoma, wife of William G. Skelly, founder of the Skelly Oil Company, established this trust fund. It is administered by two Trustees: Mr. Harold C. Stuart, president of KVOO Radio and Television and former Assistant Secretary of the Air Force, and Mr. Russell F. Hunt, Executive Vice President of the First National Bank and Trust Company, Tulsa.

Scholarships from this trust fund will be awarded only to sons, adopted sons or step-sons of active, retired, or deceased career members of the armed forces of the United States. A young man should not apply unless his father was or is a career member of the armed forces.

The applicant may indicate his choice of preparatory school, either on the high school or college level. He must apply for financial assistance before 1 May to enter school in September. Complete

information on applications may be obtained by writing to The Gertrude Skelly Trust Fund, Box 1349, Tulsa, Oklahoma.

### ***The General Henry H. Arnold Educational Fund***

Sponsored by the Air Force Aid Society, this fund provides educational assistance to sons of Air Force personnel. Consideration is given, first, to sons of deceased Air Force and Army Air Forces personnel who died on active duty or in retired status and, second, to sons of other Air Force personnel.

Assistance is limited to college and preparatory schools beyond the high school level. The applicant may make his own choice of an accredited school. An application blank may be requested from: Director, Air Force Aid Society, National Headquarters, Washington 25, D. C. An application blank is not available at Aid Society sections on Air Force installations. The completed application, including qualifications and need for financial assistance, must be returned to the Air Force Aid Society not later than 1 April preceding the fall the applicant plans to enter college.

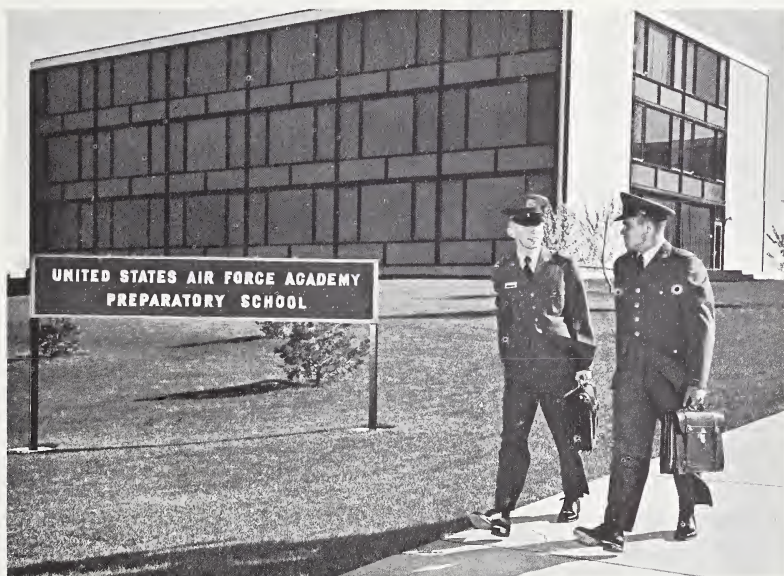
### **The Air Force Academy Preparatory School**

The Air Force Academy conducts a Preparatory School for selected members of the Regular and Reserve components of the armed forces. The school is located on the Academy site. Its purpose is to provide intensive instruction to assist servicemen in preparing for the Academy entrance examinations on an equal basis with a civilian candidate who is still in high school or has recently been graduated. It also prepares the serviceman for the Academy course of instruction. The school begins in August and continues through May. Complete information concerning the Preparatory School is contained in a brochure available upon request from the Registrar, United States Air Force Academy, Colorado.

A member of any one of the armed services on extended active duty may apply for the Preparatory School through his unit commander. Details of application and eligibility are outlined in a joint Air Force, Army, and Navy regulation entitled "Air Force Academy Preparatory School." (Specific regulation numbers are AFR 53-14, AR 350-59, BUPERS INST. 1530.49A, and MCO 1530.5.) A request for assignment to Preparatory School should be submitted as soon

as possible after 1 March. The application period closes on 30 June for members of the Regular components.

Members of the Air Force and Army Reserve and National Guard not on extended active duty may also make application for Preparatory School. Application should reach the Director of Admissions before 31 May. Army and Air National Guardsmen who are selected must then be enlisted in the Air Force Reserve. Members of the Army Reserve may either elect to retain their status or transfer to the Air Force Reserve. From Reserve status, candidates will be



called to extended active duty to attend the Preparatory School. Those who have not received basic training will be sent to Lackland Air Force Base, Texas, for this purpose.

Selection of students for the Preparatory School is accomplished by the Air Force Academy. Selection is based on the applicant's high school academic background, his extracurricular activities, the recommendation of his commanding officer, and the results of mental and physical screening examinations. Selection for the Preparatory School, or completion of the course, in no way guarantees the student an appointment to the Academy.

## SUMMARY OF THE PRESCRIBED CURRICULUM

### In Semester Hours

<b>4th Class</b>		<i>Summer</i>	<b>3rd Class</b>		<i>Summer</i>
Mil Tng 100		7½	Mil Tng 200		4
PE 110		2		<i>Fall &amp; Spring</i>	
		<u>9½</u>	Math 201-202		5½
	<i>Fall &amp; Spring</i>		Physics 211-212		5½
Math 101-102		13½	Hist 202		3
Chem 101-102		5½	Area Hist		2½
Engl 101-102		5½	Econ 202		3
Hist 111-112		5½	For Lang Sequence		9
Geog 141		4	Mech 221		2
Physio 111		2½	Beh Sci 203		2½
Acad Sk 100		0	Pol Sci 201-202		5½
Mil Tng 101, 111		2	Mil Tng 201, 211		1
PE 101, 103, 105-6		3¼	PE 201, 205-6		3
		<u>41¾</u>			<u>42½</u>
<b>2nd Class</b>		<i>Summer</i>	<b>1st Class</b>		<i>Summer</i>
Mil Tng 300, 310		4	Mil Tng 400		3
			Airmanship 410		½
					<u>3½</u>
	<i>Fall &amp; Spring</i>			<i>Fall &amp; Spring</i>	
Mech 331-332		6	Astro 401-402		5½
Elec Eng 321-322		5½	Aero 403-404		5½
Aero 301, 304		5½	Elec Eng 421		2½
Econ 311		2½	Physics 401		3
English Sequence		5½	Engl 403-404		5½
Laboratory Option		2	Pol Sci 411-412		5½
Law 311-312		5½	Academic Option		5½
Beh Sci 302-303		3	Airmanship Option		2½
Mil Tng 301-302, 311		2½	Mil Tng 401-402		1½
PE 301, 305-6		3	PE 401, 403, 405-6		3¼
		<u>41</u>			<u>40¼</u>

TOTAL SEMESTER HOURS — 186½



# The Academy Curriculum

## Accreditation

The Air Force Academy is recognized as an accredited institution of higher learning by the North Central Association of Colleges and Secondary Schools. In the fall of 1962, the Engineers' Council for Professional Development, composed of representatives of the major professional engineering societies, granted accreditation to the Major in Engineering Science. Cadets who complete the requirements for the major will earn an engineering degree entitled Bachelor of Science in Engineering Science.

## Phases of the Curriculum

The Academy curriculum consists of a diversified range of courses to prepare the cadet for a broad scope of activity as an Air Force officer. The curriculum is divided into three phases of cadet education: the academic program supervised by the Dean of the Faculty, the airmanship program supervised by the Commandant of Cadets, and physical education and athletics supervised by the Director of Athletics.

## Prescribed Curriculum

Since the Academy has the same general educational objectives for all students, the framework of the curriculum is based on standardized or prescribed courses. A total of 186½ semester hours is included in the four-year prescribed curriculum. This total is at least 35 hours greater than required for an undergraduate degree by most engineering schools and 60 hours above that of a liberal arts school. Careful organization of cadet time and utilization of the summer months for instruction make it possible for the Academy to provide the additional semester hours.

The semester hours are divided among the areas of instruction as follows: the academic program — 143½; airmanship program — 28½; physical education and athletics — 14½.

The academic year consists of the fall semester from late August through December and the spring semester from January through May. The summer term is from June until late August. Academic courses are usually accomplished during the fall and spring semesters. Physical education and military training are spread throughout the year.

## Enrichment Program

### *Objectives*

To allow for the wide variances in individual student abilities, preparation, and achievements, the Academy has developed a program of elective courses and major subjects beyond the prescribed curriculum known as the "Enrichment Program." The basic objective of the program is to challenge a cadet to advance academically as far and as fast as he can. It stimulates the student with extra ability and motivation to make the best possible use of his time and his mind. It recognizes and utilizes the previous college education a cadet may have had. And it broadens the fields of study open to a cadet and gives him the opportunity to concentrate in any of a number of areas of special interest.

### *Methods of Participation*

A cadet may participate in the enrichment program in any or all of the following ways:

*By Transfer Credit* — Any cadet who has previous college education is required to have all transcripts submitted to the Academy Registrar. All candidates selected for admission will be notified to submit complete transcripts prior to reporting to the Academy. If records indicate an acceptable level of achievement in courses corresponding to those in the Academy curriculum, the Registrar may grant transfer credit, subject to approval of the heads of departments concerned. The cadet is exempt from taking the courses in which transfer credit is granted, but he must carry a normal course load by substituting courses with approximately the same semester-hours credit.

*By Validation* — A cadet who has completed college-level courses in a secondary or preparatory school, or has acquired extensive knowledge of a subject without a college-level course, may be given validation credit for corresponding courses in the Academy curriculum. The cadet must qualify either through grades achieved on validation examinations administered at the Academy or through scores achieved previously on the College Board Advanced Placement Examinations. For courses validated, the cadet must substitute courses with approximately the same semester-hours credit in order to carry a normal course load.

*By Acceleration* — Cadets with special preparation or above average capability may be selected to take one or more prescribed courses at an accelerated rate in order to free more time in their schedule for enrichment courses. The Departments of Mathematics, Chemistry, and English offer the majority of accelerated courses. Cadets who have made high scores on the College Entrance Examination Board tests, the College Board advanced placement examinations, or advanced placement tests administered at the Academy may be eligible for accelerated courses. Also, cadets who have taken corresponding courses at other institutions but have not been awarded transfer credit may be eligible.

*Extra Electives* — A gifted cadet also has the opportunity to take extra elective courses above the prescribed semester-hour load each semester, provided he maintains above average academic grades in all prescribed courses.

## Majors Program

Cadets who complete the prescribed Academy curriculum receive a Bachelor of Science degree without a major. Those who take sufficient enrichment courses in a subject area may receive a degree with a major. Majors are offered in four undergraduate areas: International Relations, Military Management, Basic Science, and Engineering Science. Specific requirements for each of the majors are shown in the following chapter, The Academic Program. Cadets who have the time and talent to take several enrichment courses are encouraged to plan a definite program leading to a major. However, there is no requirement that a cadet pursue a major in order to take enrichment courses.

## Graduate Programs

The enrichment program also includes graduate-level courses which may be applied toward a master's degree. Under cooperative arrangements between the Academy and two civilian universities, selected cadets may earn master's degrees from these universities within seven months after their graduation from the Academy. Such master's degree programs are available at present in Astronautics and International Relations. A program in Management is contemplated in the near future. Cadets selected to participate in the co-

operative programs must complete prior to their graduation from the Academy the requirements of the prescribed curriculum, a prerequisite undergraduate major, and the equivalent of one-half year of graduate-level course work.

The Academy is seeking legislative authorization to award master's degrees at the time of graduation to cadets who find it possible to complete the requirements of the prescribed curriculum, a prerequisite undergraduate major, and one full year of graduate-level work before graduation. Until Congress authorizes the Academy to award master's degrees and appropriate accreditation is received, transcripts of cadets who complete the above requirements will note that they have completed graduate-level courses equivalent to the requirements for the appropriate degree.

## **Option Courses**

During the past year, the Academy has adopted several variations in the prescribed curriculum to allow each cadet to pursue areas of his interest. These courses are referred to in the curriculum summary as laboratory option, academic option, and airmanship option.

Cadets majoring in a subject area will normally select the option course sequences which apply to their major. Cadets not working toward a major will choose from among several option sequences. The options are not designated in the catalog because there are many courses and variations involved.

As an example of an option sequence, a cadet who is interested in the social sciences will choose that division as his academic option. He will select an area of concentration in one of the following: Soviet Bloc, Latin America, Far East, Europe or America. If he chooses Latin America, for instance, he will take Spanish as his foreign language, including a Spanish enrichment course, an economics course and a political science course pertaining to that area. During his Second Class year, he will tour South American countries as his Field Trip of Overseas Areas. Option sequences are also offered in the Basic Sciences, Applied Sciences, and Humanities.

The airmanship option allows each cadet to choose between additional instruction in navigation, designed as motivation toward a flying career, or a seminar course in military history.



## Grading

The quality of a cadet's performance in any academic course is reported by means of letter grades. These grades denote character of work and are assigned grade points as follows:

<i>Grade</i>	<i>Character</i>	<i>Grade Points Per Semester Hour</i>
A	Excellent	4
B	Good	3
C	Satisfactory	2
D	Passing	1
F	Failing	0

Cadets are expected to maintain an academic average of C or better. While a D grade is passing for any one course, a C average in all courses is necessary to satisfy the requirements for graduation. Thus a cadet must maintain a cumulative grade-point average of 2.0.

The general policy of the Academy is to grade frequently on daily recitations, general reviews, and assignments prepared outside of class. A cadet is required to be prepared to participate and recite any time he is in class.

Progress reports are published regularly during the semester to inform cadets of their grades. Grade reports are published at the end of each semester by the Office of Cadet Records.

## Deficiency and Dismissal

A cadet will be placed on academic probation if at any grade report he has a current or cumulative grade point average below 2.0 (C grade), or has an F grade in one or more courses. He will be counseled by faculty members and given the opportunity for extra instruction.

A cadet who fails only one course at the end of a semester, but has a satisfactory grade-point average, will be given a chance to remedy the grade through a turnout examination.

A cadet who fails a course or has a below minimum grade-point average is reported to the Academy Board for consideration of his case. Cases reported to the Academy Board usually receive one of the following recommendations: a specified probation period, turn-back to the next succeeding class, or dismissal from the Academy.

Other cases coming before the Board are deficiencies in conduct (demerits) or in aptitude for commissioned service.

## **Cadet Achievement**

Cadets are recognized for achievement in academic courses, military performance, and athletic participation as follows:

1. Cadets who excell in academic courses are placed on the Dean's List at the end of each fall and spring semester. The list consists of cadets whose grade-point average for the semester is at least 3.0.
2. Cadets who excell in military performance are placed on the Commandant's List at the end of each fall and spring semester. The list consists of the top 25% in each class who have demonstrated the greatest cadet effectiveness.
3. Cadets who are on both the Dean's and Commandant's Lists are carried on the Superintendent's List denoting excellence in both academics and military performance.

Cadets whose names appear on either of these lists are granted additional privileges according to their class. They are recognized for this distinction by an insignia on the sleeve of the uniform. Cadets on the Dean's List wear a small silver star, those on the Commandant's List wear a silver wreath, and those on the Superintendent's List wear a silver star enclosed in a silver wreath.

Athletic awards are presented at the annual awards banquet during June Week. Individual and team trophies are given to winners of intramural competition. Cadets receive letters and numerals to be worn on athletic jackets for their participation and achievement in intercollegiate competition. Special awards are given for outstanding performance in varsity sports.

## **Teaching Methods**

The Academy uses the discussion method of instruction in small classes, usually 12 to 16 cadets. The classroom atmosphere is relaxed with communication encouraged between the instructor and cadets. Extra instruction is provided for cadets who need assistance to improve their understanding of a subject. Experiments in programmed teaching methods and the use of closed circuit television facilities are currently in progress.

## The Faculty

The Academy maintains an all-military faculty who are qualified to motivate and educate the cadets for professional Air Force careers. Faculty members are required to have master's degrees in their fields and many of them have obtained doctorates. In addition to their academic qualifications, faculty members are chosen for their military backgrounds. A directory with the names of faculty members, their duty assignments, and their degrees is located in the back pages of the catalog. A majority of the faculty are Air Force officers. A few officers from the United States Army, Navy, and Marine Corps and from air forces of allied nations serve in a liaison capacity.

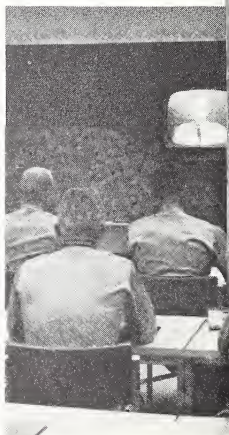
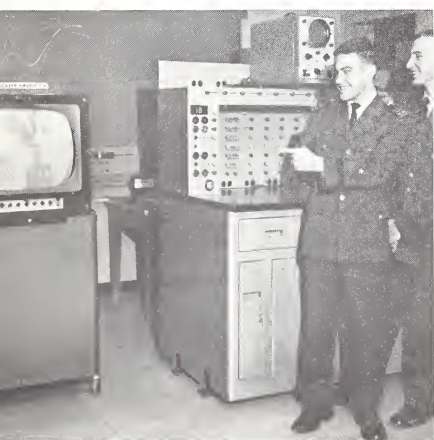
## Course Numbers

In the course listings that follow, prescribed and enrichment courses are shown by divisions and departments. Prescribed courses in the 100 series are designed for the Fourth Class (Freshman) level; the 200 series for the Third Class (Sophomore) level; the 300 series for the Second Class (Junior) level; the 400 series for the First Class (Senior) level; and the 500 series for the graduate level. Enrichment courses may be taken at any class level, provided the prerequisites are met.

Prescribed and enrichment courses are identified by the second digit of the course number. Prescribed course numbers have a second digit of 4 or less; enrichment course numbers have a second digit of 5 or above. The semester or term in which a prescribed course is primarily offered is indicated by the third digit of the course number as follows: course numbers ending in 0 are summer term courses, those ending in odd numbers are normally fall semester courses, and those ending in even numbers are normally spring semester courses.

Several courses are offered in both the fall and spring semesters. Those courses are so indicated in the descriptions. In some courses, particularly in the sciences, the semester-hours credit awarded may be  $\frac{1}{2}$  greater for the spring than for the fall semester. The reason is because the spring semester is longer than the fall (21 weeks as compared with 17), and cadets may complete additional work. In certain science courses offered during the fall, cadets may undertake extra study to earn  $\frac{1}{2}$  or 1 additional semester-hour credit.

# The Academic Program



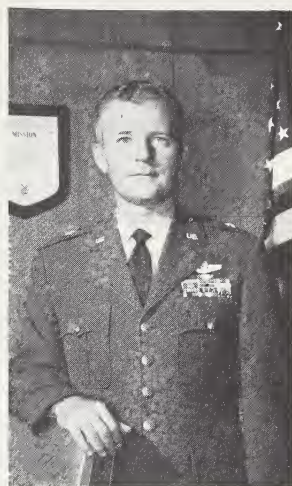


**Dean of the Faculty**  
**Brig. Gen. Robert F. McDermott**

Assistant Dean for Administration  
**COL. CHARLES W. SAMPSON**

Assistant Dean of the Faculty for Research  
**COL. BERNARD W. MARSCHNER**

*The academic program provides a general undergraduate education with courses balanced among the liberal arts and sciences.*



## **COURSES OF STUDY**

The courses of study are conducted by departments within four major academic divisions: Basic Sciences, Applied Sciences, Humanities, and Social Sciences. The prescribed and enrichment course offerings are listed under each department. In order to be a candidate for a degree, each prescribed course must be completed, or else credit must be received through transfer or validation as explained in the preceding chapter under the Enrichment Program. Enrichment courses may be taken as electives, with semester hours either applying toward a degree major or providing extra credit.

*Academic Skills 100.* A course for the new cadet to include organization of study time, the study process, factors considered in lesson preparation, listening comprehension, note taking, memory training, basic and accelerated reading skills, and application to specific curricular areas of Basic Sciences, Applied Sciences, Social Sciences, and Humanities. No semester-hour credit is given.

### ***Division of Basic Sciences***

*Division Chairman:* Col. William T. Woodyard

The Division of Basic Sciences offers courses in mathematics, chemistry, physiology, and physics. The cadet develops knowledge and skills in basic subjects which are necessary to an understanding of science in the modern world, with particular attention to the back-

ground necessary for an Air Force career. Laboratory work develops the scientific method of obtaining results through accurate observation, critical thinking, and logical reasoning. Included in the prescribed curriculum are  $32\frac{1}{2}$  semester hours in basic sciences. Cadets who are interested in this subject area may pursue a Major in Basic Science by satisfying all of the prescribed course requirements in addition to completing  $18\frac{1}{2}$  to  $20\frac{1}{2}$  hours of selected enrichment courses.

### **Department of Chemistry and Physiology**

*Professor and Head of Department:* Col. William T. Woodyard

*Associate Professors:* Lt. Cols. Cude, Sprinkel; Cpts. Goodner, Lamb

*Assistant Professors:* Lt. Col. Brundin; Maj. Clark, McFarland, Schmid, Walford; Cpts. Banks, Bartleson, Newton, Schock, Smith, VanVonderen

*Instructors:* Maj. Cooper; Cpts. Arnet, Brabson, Lindstrom, Massengale, Seegmiller, Traficante, Ward

### **Prescribed Courses**

*Chem 101-102. General Chemistry:* Kinetic-molecular theory, periodic law, properties of solutions, chemical formulas, acid-base theory, chemical reactions, chemical equilibria, the concepts of equivalent weights and the combining capacities of the elements. An introduction to the field of organic, nuclear, and analytical chemistry. Lab. Semester Hours: Chem 101 —  $2\frac{1}{2}$ , fall; Chem 102 — 3, spring.

*Physio 111. Human Physiology:* An introduction to the principles of physiology on both a cellular and organ-system level with references to the basic principles of living systems, cellular biochemistry, aero and space physiology. Semester Hours:  $2\frac{1}{2}$ , fall or spring.

### **Enrichment Courses**

*Chem 151. Accelerated General Chemistry:* Kinetic-molecular theory, periodic law, properties of solutions, chemical formulas, acid-base theory, chemical reactions, chemical equilibria, the concepts of equivalent weights, and the combining capacities of the elements. Students are chosen by the Department of Chemistry on the basis of examination scores. Successful completion fulfills the requirements for Chem 101-102. Semester Hours:  $2\frac{1}{2}$  plus 3 validation credit, fall.

*Chem 253. Organic Chemistry I:* Classification and naming of organic compounds, general reactions of aliphatic organic compounds, and an introduction to the study of stereoisomerism, proteins, and carbohydrates. Lab, optional by arrangement. Prerequisites: Chem 101-102. A laboratory and/or a term paper is required for maximum credit. Semester Hours: 2½ or 4, fall.

*Chem 254. Organic Chemistry II:* General reactions of aromatic organic compounds and an introduction to the study of polynuclear hydrocarbons, dyes, alkaloids, organometallic compounds, terpenes, and reaction mechanisms for aliphatic and aromatic compounds. Lab, optional, by arrangement. Prerequisite: Chem 253. A laboratory and/or a term paper is required for maximum credit. Semester Hours: 2½ or 4, spring.

*Chem 351. Physical Chemistry I:* Atomic and molecular structure, states of matter, chemical thermodynamics, chemical kinetics, solutions, and chemical equilibria. Prerequisites: Chem 101-102, Math 201. Semester Hours: 2½, fall.

*Chem 352. Physical Chemistry II:* Electrochemistry, ionic equilibria, colloids, quantum theory, and nuclear chemistry. Prerequisite: Chem 351. Semester Hours: 2½, spring.

*Chem 353. Theoretical Inorganic Chemistry:* Atomic structure to include build-up of the periodic table and introduction to fundamental wave mechanics. Chemical bonding including elementary wave mechanics for covalent compounds, hybridization, ionic crystals and coordination compounds. Prerequisites: Chem 102 or equivalent; completion of or concurrent enrollment in Math 202, Physics 212 or equivalents. Semester Hours: 3, spring.

*Physio 360. Comparative Vertebrate Anatomy:* A classroom and laboratory study of the anatomy of vertebrate animals. Anatomical structures are compared with emphasis on similarities of function. Elements of classification, taxonomy, embryology and development as they affect structures are studied. Included are introductory studies of organ systems and germ layer development. Prerequisites: Physio 111 or equivalent and departmental approval. Semester Hours: 4, spring.

*Physio 361. Comparative Vertebrate Embryology:* A classroom and laboratory comparative study of the development of embryos of

vertebrate animals. Detailed study of the fate and function of the germ cell layers. Prerequisites: Physio 111 or equivalent and departmental approval; Physio 360 desirable. Semester Hours: 4, fall.

*Physio 362. Advanced General Biology:* A comprehensive classroom and laboratory study of the plant and animal kingdoms. Includes a detailed analysis of morphology, function, genetics, and development with consideration of taxonomy and anatomy in comparison of organ systems. Prerequisites: Physio 111 or equivalent and departmental approval. Semester Hours: 4, spring.

*Physio 451. Introduction to Space Physiology:* Introduction to principles of physiology as applied to man in space. Emphasis on biological effects of space environment conditions. A brief introduction to the historical development of space travel and rocketry. Prerequisites: Chem 102, Physio 111 and Math 102; Physics 212 and 401 desirable but not required. Semester Hours: 3, spring.

*Chem 551. Chemical Reactions and Rates:* Chemical kinetics to include chain reactions, catalysis, heterogeneous and homogeneous reaction mechanisms, rates, and collision and rate theories from the statistical approach. Thermochemistry including classical chemical thermodynamics, bond energies, Hess' Law and dissociation. Prerequisites: Chem 351-352 or Chem 353 and permission of the department. Semester Hours: 2½ or 3, spring.

## **Department of Mathematics**

*Professor and Head of Department:* Col. John W. Ault

*Associate Professors:* Lt. Cols. Hempstead, Smith; Majs. MacWherter, Moorhead, Stevenson; Capt. Ryan

*Assistant Professors:* Majs. Arnold, Best, Kirkman, Landers, Leland, Marsland, Oesch, Robb, Spencer, Steger; Cpts. Anlian, Barr, Eisenman, Erbschloe, Harrison, Humphries, Rollins, Wethington.

*Instructors:* Majs. Norby, Ross, Thompson; Cpts. Bauman, Clegg, Emley, Glass, Helton, Jackson, Perkins, Platt, Sackschewsky, Tindall, Webb, Yantis; Lts. Johnson, Johnston, Rollinger

### **Prescribed Courses**

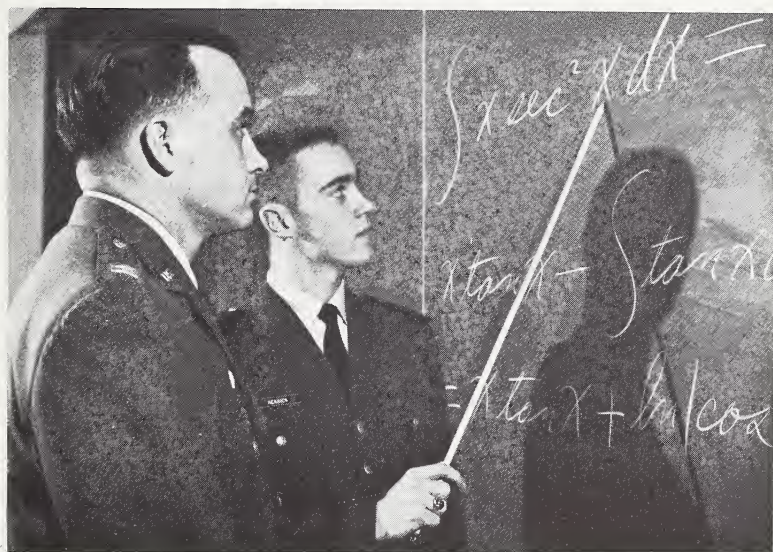
*Math 101. College Algebra, Statistics, Trigonometry:* Mathematical processes and applications related to the fundamentals of college



algebra, plane and spherical trigonometry, statistics and use of the slide rule. Semester Hours: 6, fall.

*Math 102. Analytic Geometry and Introduction to Calculus:* Mathematical processes and applications related to the fundamentals of plane analytics and differential and integral calculus using algebraic and transcendental functions. Prerequisite: Math 101. Semester Hours: 7½, spring.

*Math 201-202. Calculus and Introduction to Differential Equations:* Differential and integral calculus of algebraic and transcendental



functions, solid analytics, infinite series, partial differentiation, multiple integration, vector algebra, and an introduction to vector calculus and differential equations. Prerequisites: Math 102 for Math 201; Math 201 or equivalent for Math 202. Semester Hours: Math 201 — 2½, fall; Math 202 — 2½, fall, or 3, spring.

### **Enrichment Courses**

*Math 151. Statistics:* Fundamentals of descriptive and inductive statistical techniques including collection, organization, analysis, presentation and interpretation of numerical data, frequency distributions, correlation, index numbers, time series, and quality control.

Applications to operations and systems analysis. Prerequisite: Math 101 or equivalent. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Math 161. Calculus and Analytic Geometry:* Covers the subjects listed under Mathematics 102 plus selected topics in statistics and spherical trigonometry. Successful completion fulfills requirement for Math 101-102. Prerequisite: permission of the department. Semester Hours: 6 plus 6 validation credit, fall.

*Math 162. Calculus, Analytic Geometry and Introduction to Differential Equations:* Covers the subjects listed under Math 201-202. Successful completion fulfills the requirement for Math 201-202. Prerequisite: Math 161 or permission of the department. Semester Hours: 6, fall or  $7\frac{1}{2}$ , spring.

*Math 251. Differential Equations:* The solution of ordinary differential equations with application. Emphasis on solution of linear equations by Laplace transform, series, numerical and related methods. Introduction to partial differential equations. Prerequisite: Math 202 or equivalent. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Math 252. Matrix Vector Analysis:* A blend of matrix algebra with vector analysis including review of vector algebra, relative derivatives and coriolis, del operations and transformation theorems, linear vector spaces, curvilinear coordinates and applications. Prerequisites: Math 251 and permission of the department. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Math 352. Digital Computer Programming:* General theory of stored-program computers and programming. Introduction to elementary numerical analysis. Practical applications through preparation and execution of programs on a digital computer. Prerequisites: Math 251 and permission of the department. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Math 451. Advanced Engineering Mathematics I:* Complex variables and selected topics from advanced calculus. Prerequisites: Math 251 and permission of the department. Semester Hours:  $2\frac{1}{2}$ , fall.

*Math 452. Advanced Engineering Mathematics II:* Orthogonal expansions emphasizing Fourier series and an introduction to analytic probability and partial differential equations. Prerequisites: Math 251 and permission of the department. Semester Hours: 3, spring.

*Math 551. Introduction to Numerical Analysis:* Review of program-

ming techniques. Interpolating polynomials. Numerical solution of linear systems and ordinary differential equations. Introduction to finite difference methods. Prerequisites: Math 352 and permission of the department. Semester Hours: 3, fall or spring.

## Department of Physics

*Professor and Head of Department:* Col. Gustav E. Lundquist

*Associate Professors:* Majs. Baker, Reynolds, Westfall

*Assistant Professors:* Cpts. Cohen, Denfeld, Doss, Freyer, Prater, Smith

*Instructors:* Cpts. Carpenter, Goodwin, Henry, Kelley, Kronlund, Legate, Opp, Ware, White; Lt. Morrison

### Prescribed Courses

*Physics 211. General Physics:* Fundamental principles of statics, dynamics, wave motion, and sound. Lab. Prerequisite: Math 102 or concurrent enrollment in Math 161. Semester Hours: 2½, fall or 3, spring.

*Physics 212. General Physics:* Fundamental principles of heat, light, optics, electricity, and magnetism. Lab. Prerequisite: Physics 211. Semester Hours: 2½, fall or 3, spring.

*Physics 401. Introduction to Modern Physics:* Introduction to the fundamental concepts and experimental basis of modern physics. Topics include properties of atoms and nuclei, origin of spectra, fundamental particles, nuclear reactions, natural and artificial radioactivity, quantum theory, relativity, fission, and thermo-nuclear reactions. Major emphasis on analysis and solution of problems. Lab. Prerequisites: Physics 211-212 and Math 202. Semester Hours: 2½, fall or 3, spring.

### Enrichment Courses

*Physics 452. Principles of Modern Physics:* Selected topics of modern physics, such as the theory of relativity, electrons and photo-electric effect, the quantum theory and wave mechanics, atomic structure, spectra, and fundamental particles. Applications of mathematical physics are emphasized. Prerequisites: Physics 211-212 and Math 202, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Physics 453. Principles of Nuclear Physics:* Selected topics of nuclear physics, such as alpha, beta and gamma emission; nuclear interactions; particle detection; nuclear forces and cosmic rays; fission and fusion; nuclear spins and magnetism. Emphasis on depth and mathematical rigor. Lab. Prerequisite: Physics 452 or permission of the department. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Physics 454. Neutron Physics:* An advanced undergraduate or first-year graduate course in the fundamental principles of neutron utilization. Topics include criticality developments, aspects of fusion, attenuation of nuclear radiations, nuclear sensing devices, and advanced nuclear propulsion schemes. Emphasis on mathematical development and derivation. Prerequisites: Physics 452-453. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Physics 455. Advanced Topics in Physics:* Selected topics from the field of theoretical and applied physics, i.e., quantum mechanics, plasma physics, solid-state, thermonuclear and fission reactor physics, and classical electrodynamics and mechanics. Prerequisites: Physics 453 and Math 251 or equivalent. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

## ***Division of Applied Sciences***

*Division Chairman:* Col. Archie Higdon

The Division of Applied Sciences offers courses in aerodynamics, astronautics, electrical engineering, mechanics, and thermodynamics. These disciplines are essential to an understanding of the technology upon which aerospace power depends. Air Force applications of engineering science are emphasized so as to give each cadet a basic knowledge of modern weapon systems and an understanding of the problems associated with their design, development, and procurement. In laboratory work, the cadet gains ability to apply the scientific method to the solution of practical problems and the evaluation of experimental results. Included in the prescribed curriculum are  $35\frac{1}{2}$  semester hours in the applied sciences. Cadets may obtain a Major in Engineering Science, accredited by the Engineers' Council for Professional Development, by completing all prescribed course requirements plus  $21\frac{1}{2}$  to 24 hours of selected enrichment courses.



## Department of Aeronautics

*Professor and Head of Department:* Lt. Col. Gage H. Crocker

*Professor:* Col. Marschner

*Associate Professors:* Lt. Cols. Calhoun, Daley; Majs. Steiger, Yale

*Assistant Professors:* Majs. Bubb, Chrisinger, Neyhart; Cpts. Bal-  
ner, Cole, Loeschner, Welch; Lts. Hennrich, Norman

*Instructors:* Cpts. Bishop, Crim, Koestner, Piper, Pollard, Pyne,  
Russell, Shaw, Stelpflug, Willes

### Prescribed Courses

*Aero 301. Fundamental Thermodynamics:* Classical thermodynamics treating the various phenomena of energy, with particular reference to laws which govern the transformation of heat into useful work and power. Prerequisites: completed or enrolled in Physics 212 and Math 202. Semester Hours: 2½, fall.

*Aero 304. Fundamental Aerodynamics:* Concepts for analyzing fluid flow including conservation equations. Viscous effects and boundary layer characteristics. Compressible flow theory including normal and oblique shock waves, and estimation of lift and drag of supersonic airfoils. Introduction to heat transfer. Includes lab. Prerequisite: Aero 301 or 351. Semester Hours: 3, spring.

*Aero 403. Fundamentals of Propulsion:* Fundamental principles as they apply to practical systems. Emphasis is placed upon propulsion systems used in aircraft, missiles and space vehicles. 4-6 laboratory exercises. Prerequisite: Aero 304. Semester Hours: 2½, fall.

*Aero 404. Applied Aerodynamics:* A study of airfoil theory, wing theory, drag estimation and theory of lift; fundamentals of performance analysis; longitudinal and lateral-directional static stability; introduction to longitudinal dynamic stability; discussion of lateral-directional dynamic stability; and a survey of control forces and hinge moments. Includes lab. Prerequisite: Aero 403 or 451. Semester Hours: 3, spring.

### Enrichment Courses

*Aero 351. Introduction to Thermodynamics:* Classical thermodynamics treating the various phenomena of energy, with particular reference to laws which govern the transformation of heat into useful work and power. The material in this course is essentially the same

as in Aero 301, except that it is covered more rigorously. Prerequisites: Math 202 and completed or enrolled in Physics 212. Semester Hours: 2½, fall or 3, spring.

*Aero 352. Thermodynamic Application:* Introductory fundamentals of gas dynamics, rocket propulsion, and aircraft propulsion systems. Involves application of the laws of thermodynamics, motion, and mass conservation. These basic laws are applied to chemical reaction processes to analyze the generation of thrust in rocket and aircraft propulsion systems. The general sequence of topics is: one-dimensional gas dynamics, rocket motor performance, aero-thermo chemistry of rocket propellants, and aircraft propulsion systems. Includes lab. Prerequisites: Aero 351 with a grade of "C" or better, or Aero 301 and permission of the department. Semester Hours: 2½, fall or 3, spring.

*Aero 353. Introduction to Heat Transfer:* Basic phenomena of energy transport by conduction, convection, and radiation heat transfer in solids and viscous fluids. Special problems involving heat transfer such as rocket motor design, aerodynamic heating, and heat exchangers. Prerequisites: Math 202; completed or enrolled in Aero 301 or 351. Semester Hours: 2½, fall or spring.

*Aero 451. Fluid Mechanics:* Fundamental concepts for describing and analyzing the flow of fluids about an immersed body. Includes the study of incompressible flow applied to boundary layers and pipes, the theory of dimensional analysis and similitude, and an introduction to potential flow theory and airfoil and wing theory. Includes lab. Prerequisites: completed or enrolled in Math 251 and Mech 362 or equivalent.

*Aero 453. Supersonic Aerodynamics:* One- and two-dimensional supersonic flows, shock waves, hypersonic and transonic flow problems, and an introduction to boundary layer problems in compressible flow. Includes lab. Prerequisite: Aero 451. Semester Hours: 3, spring.

*Aero 456. Aerodynamics:* Aircraft performance, longitudinal and lateral static stability and control, steady state maneuvers, and dynamic stability. Prerequisite: Aero 451. Semester Hours: 2½, fall.

*Aero 464. Preliminary Design of Airlift Vehicles:* Fundamentals of design presented by means of preliminary design of an advanced airlift vehicle. Determination of optimum vehicle configuration to

meet given specifications; weight estimation; selection of optimum propulsive system; performance calculations; longitudinal and lateral static stability analysis; functional suitability. Includes design lab. Prerequisites: Aero 453 and 456. Semester Hours: 4, spring.

*Aero 551. Dynamics of Flight:* Advanced topics in aircraft stability and control. Stability of vehicles in orbital and reentry trajectories. Use of Lagrange multipliers and the calculus of variations for the determination of optimum trajectories. Includes lab. Prerequisite: Aero 456. Semester Hours: 3, spring.

*Aero 552. Experimental Techniques in Engineering Science:* Introduction to theory and practice in modern experimental techniques and instrumentation. Emphasis is placed on the students' planning, conducting, and reporting of selected experimental problems with minimum faculty supervision. A laboratory course with introductory lectures. Prerequisite: permission of the department.

*Science 571. Space Propulsion Systems:* A detailed survey of propulsion concepts for space flight. Includes study of propulsion systems such as chemical and nuclear rockets, plasma jets, ion drives, photon drives, and magneto-hydrodynamics. Power generation in space is covered. Prerequisites: Aero 352, Physics 453, and completed or enrolled in Astro 451, or permission of the department. Semester Hours: 3, fall.

*Aero 574. Thesis:* Topic established with Head of Department. Semester Hours: 6 to 9, fall and spring.

## Department of Astronautics

*Professor and Head of Department:* Col. Francis J. Hale

*Professor:* Lt. Col. Bate

*Associate Professors:* Lt. Col. Collier; Capt. Thomas

*Assistant Professors:* Maj. Manlove; Capts. Barnes, McKelvey

*Instructors:* Majs. Casey, Korthals, Leiser, Riccioni, Wittry; Capts. Bodeen, Hjorten, Jacobs, Millard, Molnar, Moravec, Preyss.

### Prescribed Courses

Engineering Science majors will substitute Astro 451 and 453 for 401 and 402.

*Astro 401. Elements of Astronautics I:* Fundamentals of ballistic missiles and satellites to include the two-body problem, high-thrust

ballistic missile trajectories, and re-entry body trajectories. Prerequisites: Math 202 and Mech 331. Semester Hours: 2½, fall.

*Astro 402. Elements of Astronautics II:* Fundamentals of space technology to include orbit determination, interplanetary trajectories, guidance and control, communications, and space power plants. Prerequisite: Astro 401. Semester Hours: 3, spring.

### **Enrichment Courses**

*Astro 451. Astrodynamics:* Fundamentals of free flight trajectories including the two- and three-body problems, ballistic, satellite, inter-



planetary, and lunar trajectories. Prerequisites: Math 202, Mech 331-332 or appropriate substitutes. Semester Hours: 2½, fall or spring.

*Astro 452. Linear Control System Analysis:* Systematic methods of setting up physical problems in terms of linear mathematical models. Systematic methods of solving sets of linear differential equations with constant coefficients. Introduction to Laplace transforms, block diagrams, and transfer functions. Examples are drawn from areas



of servo-mechanisms, missile guidance control, and stable platforms. Prerequisites: Math 251, EE 321, Mech 331, or permission of the department. Semester Hours: 2½, fall or spring.

*Astro 453. Space Technology:* Fundamentals of power and re-entry trajectories, orbit determination, and trajectory selection criteria. Prerequisite: Astro 451. Semester Hours: 3, fall or spring.

*Astro 454. Ballistic and Space Vehicle Guidance:* Fundamentals of guidance to include guidance philosophies, inertial, radio and optical guidance, and their applications. Prerequisites: completed Astro 451, 452 and enrolled in Astro 453, or permission of the department. Semester Hours: 3, spring. May be taken in fall by special scheduling.

*Astro 464. Ballistic and Space Vehicle Design:* Fundamentals of design including the preliminary design of a ballistic or space vehicle. Includes consideration of rocket acceleration and velocity profiles, powered weight, payload, and range capacities. Prerequisites: Astro 451, 452 and enrolled in Astro 453, 454. Semester Hours: 4, fall or spring.

*Astro 551. Advanced Astronautics:* Advanced topics in astronautics. Prerequisites: Astro 451, 453 and completed or enrolled in Astro 452, 454, or permission of the department. Semester Hours: 2½, fall or spring.

*Astro 574. Thesis:* Topic established with Head of the Department. Prerequisite: 1st Class standing. Semester Hours: 6 to 9, fall and spring.

## **Department of Electrical Engineering**

*Professor and Head of Department:* Col. James V. G. Wilson (on temporary duty at NORAD, Colorado Springs)

*Professor and Acting Department Head:* Lt. Col. Harold J. Bestervelt

*Associate Professors:* Majs. Basham, Davis, Knauss, Lathrop

*Assistant Professors:* Majs. Larsen, White; Capts. Huston, Parshall

*Instructors:* Lt. Col. Stonebraker; Maj. Saxon; Capts. Beresford, Hanson, Moore, Moran, Violette, Wesner, Gowen

### **Prescribed Courses**

*EE 321. Circuit Analysis:* Includes mathematical analysis of electrical circuits with emphasis on fundamental principles, natural response by the solution of the second order differential equation, steady

state response by exponential (phasor) representation of sinusoids, series and parallel resonance, loop (mesh) and nodal analysis of complex circuits including multimesh inductivity couple circuits, three-phase power considerations, equivalent circuits, Thevenin's Theorem and Norton's Theorem. Includes lab. Prerequisites: Physics 212 and Math 202. Semester Hours: 2½, fall or 3, spring.

*EE 322. Circuits, Machinery, and Basic Electronics:* Continuation of circuit analysis in EE 321 to include magnetic circuits, nonlinear circuit elements, graphical methods of solutions, elementary DC and AC machinery, electron ballistics, diodes, triodes, and tetrodes. Vacuum tubes and semi-conductors are given parallel treatment to include basic equivalent circuits for each. Includes lab. Prerequisite: EE 321. Semester Hours: 2½, fall or 3, spring.

*EE 421. Electronics and Electronic Radiation:* Graphical, analytical, and experimental analysis of amplifiers, oscillators, power supplies, and wave-shaping circuits. An introductory study of information transmission, fundamentals of telemetry and radar systems. Includes lab. Prerequisite: EE 322. Semester Hours: 2½, fall or 3, spring.

### **Enrichment Courses**

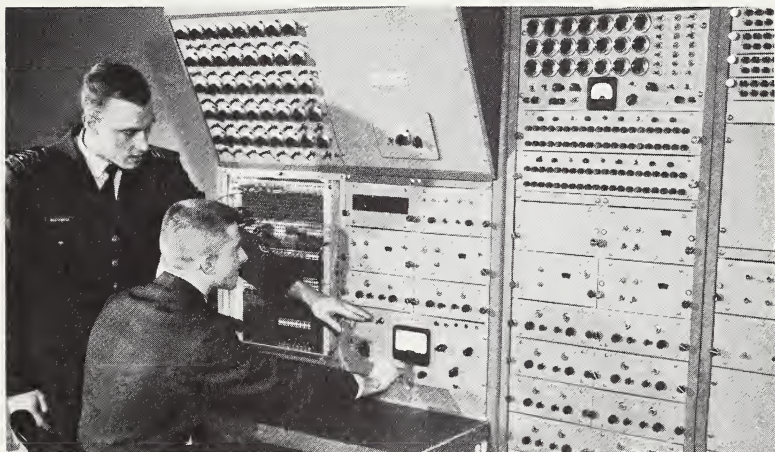
*EE 361. Circuit Analysis:* The first course of an accelerated sequence. Contains all of the material covered in EE 321 and the first half of EE 322. Includes lab. Prerequisites: completion or concurrent registration in Math 251 and permission of the department. Permission will not normally be given unless a cadet has a cumulative science GPA or 3.0 or above. Semester Hours: 2½, fall or 3, spring.

*EE 362. Intermediate Electronics:* The second course of an accelerated sequence. Consists of the graphical, analytical, and experimental analysis of AC and DC machinery, semi-conductors, and vacuum diodes, power supplies and filters, four-terminal networks, the vacuum tube and transistors as control devices, amplifiers, oscillators, and wave shaping devices. Contains a study of the principles of electron emission and ballistics, modulation and feedback. Includes lab. Prerequisite: EE 361. Semester Hours: 2½, fall or 3, spring.

*EE 453. Analog Computation:* Analog computer techniques as applied to the solution of differential equations arising in engineering problems. Topics considered are electronic computing circuits, time and magnitude scale factors, and problem set-up procedures. Empha-

sis is placed upon use of equipment in the solution of typical problems. Prerequisites: Math 251 and EE 321 or 361. May be taken concurrently with EE 321 or 361 with consent of the department. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*EE 455. Electronics and Electromagnetic Radiation:* Course contains the same basic information as EE 421, but it is presented in a more rigorous manner. Includes a study of HF and UHF oscillators, transmission lines, filters, wave guides, antennas and radiation concepts with heavy reliance placed on vector analysis and Maxwell's equations. Radar considerations include a study of selectivity, sensitivity and range, as well as a discussion of various radar components and systems. Lab. Prerequisite: EE 362. Semester Hours:  $2\frac{1}{2}$  or 3, fall or spring.



*EE 456. Advanced Communications and Electromagnetic Radiation:* A study of current long-range communication systems and techniques, including efforts undertaken in this area by the Air Force Systems Command. Lab. Prerequisite: EE 455 and permission of the department. Semester Hours:  $2\frac{1}{2}$  or 3, fall or spring.

*EE 464. Design by Analog Simulation:* Applications of an analog computer to engineering design problems. Methods and design problems applicable to nonlinear systems, partial differential equations, and algebraic models in the fields of applied science. Prerequisite: EE 453. Semester Hours:  $3\frac{1}{2}$  or 4, fall or spring.

*EE 551. Servomechanism Analysis and Synthesis:* Synthesis and analysis of complex servomechanism systems involving multiple loops. Lab. Prerequisite: Astro 452. Semester Hours: 2½, fall or 3, spring.

*EE 562. Individual Study:* Advanced topics in engineering design utilizing hybrid computer techniques. Prerequisite: EE 464. Semester Hours: 4 to 6, fall and spring.

*EE 574. Thesis:* Topic established with Head of Department. Semester Hours: 6 to 9, fall and spring.

## **Department of Mechanics**

*Professor and Head of Department:* Col. Archie Higdon

*Associate Professors:* Lt. Col. Orton; Maj. Gray, Quanbeck; Capt. Estes

*Assistant Professors:* Capts. Erdle, Giltner, McCreery, Orth; Lt. Iwan

*Instructors:* Maj. Bacha, Brunson; Capts. Doderer, Fluhr, Gebhardt, Harvill, Johnson, Kirchgessner, McClammy, Neubauer, Oppel, Rule, Smetana, Stewart

### ***Prescribed Courses***

Cadets will fulfill their 2-hour engineering drawing and descriptive geometry requirement by completing either Mech 221 or Mech 227-228.

*Mech 221. Basic Engineering Drawing and Descriptive Geometry:* Develops ability to read and understand technical drawings and to visualize objects in space. Includes freehand sketching, oblique and isometric drawing, orthographic projection, descriptive geometry, intersections and developments, sections, conventions, dimensioning, fasteners, aircraft working drawings, and construction of charts and graphs. Semester Hours: 2, fall or spring.

*Mech 227. Engineering Drawing:* Freehand sketching, oblique and isometric drawing, and orthographic projection. Semester Hour: 1, fall or spring.

*Mech 228. Descriptive Geometry:* Descriptive geometry, intersections and developments, and aircraft working drawings. Prerequisite: Mech 227. Semester Hour: 1, fall or spring.

*Mech 331-332. Engineering Mechanics, Mechanics of Materials:* The principles of statics and dynamics to include the free body dia-



gram concept, the equations of equilibrium, friction, centroids, moments of inertia, kinematics, kinetics (force, mass and acceleration, work and energy, impulse and momentum). Mechanics of materials includes centric, torsional and flexural loadings, columns, impact and fatigue, principal stresses, and some materials testing laboratory. Prerequisites: credit or enrolled in Physics 211 and in Math 102 or equivalent. Semester Hours:  $2\frac{1}{2}$ , fall and  $3\frac{1}{2}$  spring; or 3, spring and 3, the following fall.

### ***Enrichment Courses***

Students who plan extensive study in science and engineering should substitute Mech 361-362 for Mech 331-332.

*Mech 355. Applications of Solid State:* Properties of engineering materials oriented toward the special problems of materials used in manufacturing aircraft and missiles. Emphasis is placed on the fundamental science of materials including theory of solids, behavior under load, deterioration, and theory of mechanical testing. Prerequisites: Mech 332 or 362 and Physics 452. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Mech 361-362. Engineering Mechanics, Vectors; Mechanics of Materials:* Develops the students' facility to use vector methods in analysis, thereby preparing for advanced study in science and engineering. Covers principles of statics, dynamics and mechanics of materials, free body concept, equations of equilibrium, friction, centroids, moments of inertia, kinematics, kinetics and mechanics of materials, including centric, torsional, and flexural loading, impact and fatigue, and principal stresses. May be taken in lieu of Mech 331-332. Prerequisites: Physics 211 and credit or enrollment in Mech 321 and Math 251. Semester Hours:  $2\frac{1}{2}$ , fall,  $3\frac{1}{2}$ , spring; or 3, spring, and 3, the following fall.

*Mech 451. Fundamentals of Aerospace Structures:* Mechanics of aircraft structures to include unsymmetrical bending, curved flexural members, torsional resistance of thin-walled members and non-circular cross sections, and shear center calculation. Energy methods relating loads and deflections for both determinate and indeterminate structures. Prerequisite: Mech 332 or 362. Semester Hours: 3, fall or spring.

*Mech 454. Advanced Dynamics and Vibrations:* A continuation of the study of dynamics to include rigid body dynamics of three dimensions, Hamilton's and LaGrange's equation, and motion in central force fields. The vibrations of linear systems with single and multiple degrees of freedom are analyzed. Free, damped, and forced vibrations are considered. Prerequisites: Mech 332 or 362 and Math 251. Semester Hours:  $2\frac{1}{2}$ , fall or 3, spring.

*Mech 464. Design:* Individual problems in aerospace structures, dynamics, mechanics of materials or properties of materials. Prerequisite: permission of the department. Semester Hours: 4, fall or spring.

*Mech 551. Advanced Aerospace Structures:* Aeroelastic phenomena to include deformation of structures under static and dynamic loading. Methods of structural analysis are covered for frameworks, shells, and columns. Some creep and thermal effects are discussed. Prerequisite: Mech 451. Semester Hours: 3, fall or spring.

*Mech 552. Vibrations of Aerospace Structures:* Analysis of linear vibration problems with specific application to aeroelasticity. Solution of multi-degree-of-freedom problems for free, damped, and forced motions to include LaGrange's equation and Hamilton's principle. Deformations of aircraft and missile structures under static and dynamic loads to include use of influence coefficients, differential equations, and integral equations. Use of generalized coordinates, normal modes, and frequencies. Elementary vibrations of continuous media, lateral vibration of beams, torsional vibration of circular shafts, and longitudinal vibration of bars. Prerequisites: Mech 362 and Math 251. Semester Hours: 3, spring.

*Civ Engr 350. Experimental Stress Analysis Laboratory:* A series of laboratory exercises with classroom discussion of the theoretical principles which apply both to test specimens and testing machines. Subjects include the use of such modern techniques as electronic strain gauges, stress coat, and photoelasticity, as well as the more basic systems. Also included is an introduction to concrete testing. No outside preparation is required. Prerequisite: Physics 211; some basic knowledge of strength of materials is helpful but not mandatory. Semester Hours: 2, fall or spring.

*Civ Engr 451. Design of Engineering Structures:* An introduction to the techniques and philosophy of design. Building and bridge

structures are considered, and elementary engineering designs are accomplished in both steel and aluminum. Attention is given to specification requirements and design details. Prerequisite: Mech 332 or 362. Semester Hours:  $2\frac{1}{2}$ , fall.

*Civ Engr 452. Engineering Design and Nuclear Weapons Effects on Structures:* Design concepts of Civ Engr 451 are continued. Elementary designs in reinforced concrete are accomplished with appropriate use of standard specifications. Effects of nuclear explosions on building structures and utilities are covered. Studies include characteristics of blast wave action against structures, factors affecting the response of structures, damage evaluation criteria, and protective shelter construction. Prerequisite: Civ Engr 451. Semester Hours: 3, spring.

*Science 350. Electro-Mechanical Systems Laboratory:* A series of laboratory exercises which illustrate the fundamental mathematical concepts in analysis of physical systems. Subjects include the representation of physical systems, design of experiments, reduction and analysis of data, error analysis, study of single degree of freedom systems and elementary field problems. No outside preparation required. Prerequisites: Physics 211 and Math 202 or equivalents. Semester Hours: 2, fall or spring.

*Mech 574. Thesis:* Topic established with Head of Department. Semester Hours: 6 to 9, fall and spring.

## ***Division of Humanities***

*Division Chairman:* Col. Wilbert H. Ruenheck

The Division of Humanities offers courses in English, philosophy, foreign languages, history, and fine arts. Through these studies the cadet develops the skills of speaking and writing effective English; acquires an appreciation of literature; develops an understanding of major philosophical problems; attains facility in understanding and speaking a foreign language; and acquires a knowledge of Western heritage and contemporary world civilization. Included in the prescribed curriculum are  $36\frac{1}{2}$  semester hours in the humanities. Cadets who are interested in this subject area may pursue either a Major in International Relations or a Major in Military Management. Both of these majors require  $18\frac{1}{2}$  to  $20\frac{1}{2}$  semester hours of enrichment courses above the prescribed curriculum.

## Department of English

*Professor and Head of Department:* Col. Peter R. Moody (on temporary duty at Cambridge University, England)

*Professor and Acting Department Head:* Lt. Col. Cortland P. Auser

*Associate Professors:* Majs. Alm, Briand, Brockway, Clark, Galt, Gatlin, Pearsall, Richter, Roberts, Sweetser, Weese

*Assistant Professors:* Maj. Reid; Capts. W. Anderson, Berthelot, Burroughs, Haney, Maroldo, Mendelsohn, Miller, Misenheimer, Powell, Wakin, Zink; Lt. Myro

*Instructors:* Capts. P. Anderson, Ayers, Bayless, Berke, Cohn, Dater, Gray, Kielcheski, Killey, J. McCarthy, L. McCarthy, Sheldon, Taylor; Lts. Conely, Cooper, Girod, Selling

### *Prescribed Courses*

Second Class year courses are an option sequence. Cadets must complete either Engl 331 or 332 and either Engl 334, 334X, 335, or 336.

*Engl 101. Composition and Introduction to Literature:* Study of basic rhetorical principles and frequent practice applying these principles; writing and revising one theme per week. Semester Hours: 2½, fall.

*Engl 102. Composition and Literature:* Continuation of Engl 101 with two research papers in lieu of some of the weekly themes; the study of four short novels and one long narrative poem supplementing the writing instruction. Prerequisite: Engl 101. Semester Hours: 3, spring.

*Engl 331. Technical Report Writing and Speech:* Designed for science majors. A study and application of the basic principles of clear communication in expository writing and speech. Emphasis is on developing an educated, clear style for the purpose of communicating scientific knowledge beyond the limits of specialized areas of research. Prerequisites: Engl 101-102 or Engl 151-152 and Second Class standing, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Engl 332. Advanced Composition and Speech:* Designed for non-science majors. Affords practice in effective writing and speaking. Covers an intensive review of the principles of organization, functional aspects of grammar, and diction. Includes cadet speeches and



the writing of effective themes in reaction to assigned readings. Prerequisites: Engl 101-102 or Engl 151-152 and Second Class standing, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Engl 334. Ethics:* A study of contemporary ethical theory for the development of sound moral character and the exercise of intelligent leadership. Cadets demonstrate their understanding of the practical significance of ethical theory through panel discussions and written analysis of specific moral problems which are relevant to responsibilities of the Air Force officer and the American citizen. Prerequisites: Engl 101-102 or Engl 151-152 and Second Class standing, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Engl 334X. Ethics:* Special sections of Engl 334 designed for those 4th Class cadets who have received college credit for courses equivalent to Engl 101-102 or Engl 151-152.

*Engl 335. Logic:* A study of the fundamental patterns of sound reasoning. Designed to provide the cadet with the most effective thought tools necessary for clear, concise communication and to help him develop the ability to analyze and solve significant problems. Prerequisites: Engl 101-102 or Engl 151-152 and 2nd Class standing, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Engl 336. Problems in Philosophical Analysis:* A study of the significance of contemporary philosophical thought for the analysis, evaluation, and resolution of contemporary problems involving individual, social, and cultural values. Designed to help the cadet organize and direct his thinking most effectively and to understand the importance of sound philosophical analysis for intelligent leadership. Written analysis and evaluations of contemporary philosophical approaches to various problems are required. Prerequisites: Engl 101-102 or Engl 151-152 and 2nd Class standing, or permission of the department. Semester Hours: 2½, fall or 3, spring.

*Engl 403. Masterworks of Western World Literature:* A study of literature from the Greek classics through Shakespeare. Reading, discussion, and critical analysis of six Greek tragedies, selections from Chaucer's *Canterbury Tales*, and four Shakespeare plays. Prerequisites: Engl 331 or 332 and Engl 334, 335 or 336 and 1st Class stand-

ing. With departmental approval the latter requirement may be waived for master's candidates. Semester Hours: 2½, fall.

*Engl 404. Masterworks of Western World Literature:* A study of literature from the Renaissance to the contemporary period. Reading, discussion, and critical analysis of Renaissance, Romantic, and Modern literature. Representative writers are Milton, Hawthorne, Dostoevsky, Conrad, Joyce, Faulkner, and Camus. Prerequisites: Engl 403 and 1st Class standing. With departmental approval and the latter requirement may be waived for master's candidates. Semester Hours: 3, spring.

### ***Enrichment Courses***

*Engl 151. Composition and Literature:* Advanced critical writing to include research papers, speaking, critical thinking, and analysis of the short story and novel. Prerequisite: upper 20% of the class on entrance and validation examinations. Semester Hours: 2½, plus 2½ validation for Engl 101, fall.

*Engl 152. Modern Literature:* Analysis in depth of the novel, poetry, and drama with some emphasis on critical writing and speaking. May be substituted for Engl 404. Prerequisite: Engl 151. Semester Hours: 3, spring.

*Engl 351. Speech:* Informative and persuasive speaking. A number of speeches, 5 to 20 minutes in length, are required. Prerequisites: Engl 101-102, or with departmental approval 4th Classmen may enroll. Semester Hours: 2½, fall or spring.

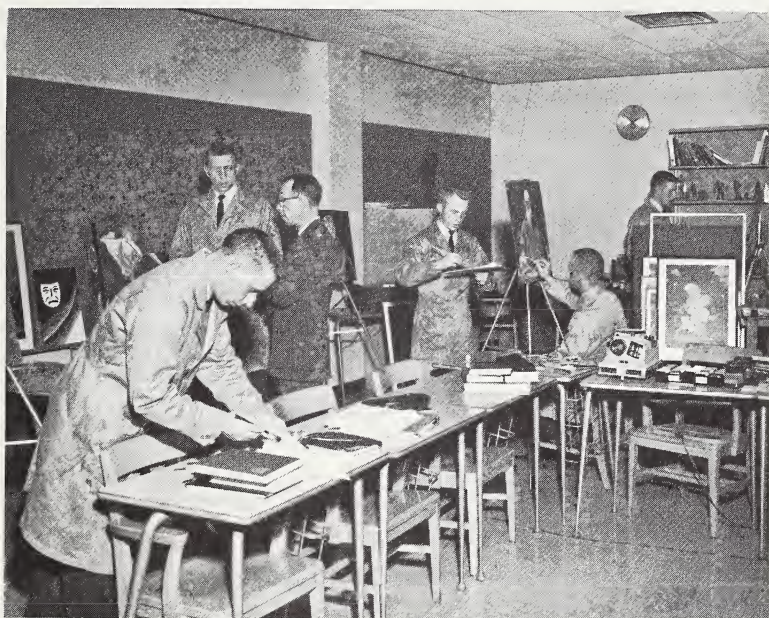
*Engl 352. Modern American Literature:* Reading and analyzing representative works of some major American writers such as Hawthorne, Melville, Twain, Dickinson, and James, not included in prescribed literature courses. Prerequisites: Engl 101-102 or equivalent. Semester Hours: 3, spring.

*Engl 353. Shakespeare:* An intensive study of several Shakespeare plays not included in the prescribed literature courses. Plays selected represent periods of Shakespeare's development and include comedies, histories, and tragedies. Emphasis is on plot, theme, character, and style. Prerequisites: Engl 101-102 or equivalent. Semester Hours: 2½, fall.

*Engl 451. Introduction to the Arts:* An introduction to painting and sculpture. Emphasis is on the communicative elements and tech-

niques involved in individual art forms; the techniques of analysis leading to an appreciation and understanding of differing forms of expression, and the potentials and limitations of each. Representative works by major artists are analyzed. Cadets do laboratory projects in sculpture and painting. Prerequisites: Engl 101-102 or equivalent. Semester Hours: 2½, fall.

*Engl 452. Introduction to the Arts:* A continuation of Engl 451. Provides a basis for understanding and appreciating architecture, music, opera, and ballet. Cadets do laboratory projects in sculpture



and painting. Prerequisites: Engl 101-102 or equivalent and Engl 451, or permission of the department. Semester Hours: 3, spring.

*Engl 453. Fine Arts:* A survey of styles and achievements of representative major artists from the classical period to the present. Major emphasis is on critical analysis as a basis for understanding and appreciating various forms of artistic communications in all periods. Prerequisites: Engl 101-102. Semester Hours: 2½, fall or 3, spring.

*Engl 454. Fine Arts Laboratory:* Cadets who elect this laboratory as a part of the three-course humanities option will complete a series

of projects relating to color and design and basic painting and sculpture techniques. No prerequisites are required for the option. This course may also be taken as enrichment by cadets who complete Engl 451-452 or Engl 453; advanced painting and sculpture will be required. Semester Hours: 2, if taken as a laboratory option; 2½, if taken as enrichment, fall or spring.

*Engl 455. Music Appreciation:* This course complements Engl 453. It includes on an expanded scale the musical instruction taught in Engl 452. Consists of a chronological, analytical survey of musical forms and styles and a study of major works by representative composers. No prerequisites are required. Semester Hours: 2½, fall or 3, spring.

*Engl 456. Great Books:* A study of some of the major writers of world literature. Included are such writers as Homer, Dante, Swift, Fielding, Goethe, and Hemingway. Emphasis is on the discussion of reading in great books. Prerequisites: Engl 101-102 or equivalent. Semester Hours: 3, spring.

*Engl 461. Contemporary World Literature:* A study of contemporary American, British, and continental short stories, dramas, and short novels. Works not covered in other courses by such authors as Zola, Dostoevsky, Chekhov, Conrad, Kafka, Mann, and Gide are studied. Prerequisites: Engl 101-102 or equivalent and upperclass standing. Semester Hours: 2½, fall or 3, spring.

## **Department of Foreign Languages**

*Professor and Head of Department:* Col. Alfonse R. Miele

*Associate Professors:* Lt. Col. Cortez; Majs. Junod, Roche; Cpts. Barnett, Geffen, Velarde.

*Assistant Professors:* Majs. Castro, Terlinden; Cpts. Donoho, Fatiuk, Gelas, Heine, Judel, Ortiz-Lopez, Sovinsky, Zagorski

*Instructors:* Majs. Berdecio, Yuan; Cpts. Anderson, Carney, Green, Guzman, McManis, Nixon, Ryan

### **Prescribed Courses**

*For Lang 101-102. English as a Second Language:* Intensive pattern drills in the English language for those whose native language is not English. Semester Hours: 2½, fall or 3, spring.

*For Lang 201 to 241. (Chi 201—Elem Spoken Chinese, I; Fr 211—*



*Elem Spoken French, I; Ger 221—Elem Spoken German, I; Russ 231—Elem Spoken Russian, I; Span 241—Elem Spoken Spanish, I*): Introduction to a foreign language with emphasis on understanding and speaking. Structural analysis by induction. Language lab. Prerequisite: Third Class standing. Semester Hours: 4, fall.

*For Lang 202 to 242. (Chi 202—Elem Spoken Chinese, II; Fr 212—Elem Spoken French, II; Ger 222—Elem Spoken German, II; Russ 232—Elem Spoken Russian, II; Span 242—Elem Spoken Spanish, II)*: Continuation of For Lang 201-241. Includes some practice in reading and writing. Language lab. Prerequisites: Third Class standing and For Lang 201-241. Semester Hours: 5, spring.

### **Enrichment Courses**

*For Lang 361 to 391. (Fr 361—Intermediate Spoken French, I; Ger 371—Intermediate Spoken German, I; Russ 381—Intermediate Spoken Russian, I; Span 391—Intermediate Spoken Spanish, I)*: Review of the essential elements of language structure. Conversational practice and pattern drills. Civilization and culture of the country. Selected readings. Prerequisites: "B" or better average in For Lang 212-242 or the equivalent, plus approval of the appropriate course director. Semester Hours: 2½, fall.

*For Lang 362 to 392. (Fr 362—Intermediate Spoken French, II; Ger 372—Intermediate Spoken German, II; Span 392—Intermediate Spoken Spanish, II)*: Continuation of For Lang 361, 371, and 391. Prerequisites: completion of For Lang 361-391 with "C" or better average, plus approval of the appropriate course director. Semester Hours: 2½, spring.

*For Lang 382. (Russian 382—Intermediate Spoken Russian, II)*: Accelerated structural analysis. Additional conversational practice. Civilization and culture of Russia. Selected readings. Prerequisites: "B" or better average in Russ 231-232 or the equivalent, plus the approval of the appropriate course director. Semester Hours: 2½, spring.

*For Lang 491. (Span 491—Seminar in Spanish Culture and Civilization)*: Appreciation of Latin-American and Spanish culture and civilization through discussion of selected literary readings. Prerequisites: "C" or better in Span 392 or the equivalent, plus approval of the Spanish course director. Semester Hours: 2½, fall or spring.

## Department of History

*Professor and Head of Department:* Col. Wilbert H. Ruenheck

*Professor:* Lt. Col. Fagan

*Associate Professors:* Lt. Col. Downs; Majs. Hitchens, Thorpe;  
Capts. Crabbe, Zook

*Assistant Professors:* Majs. Jones, Murray, Phillips; Capts. Baulch,  
Bowers, Cooke, Hurley, Julian, Miller, Peck, Rohr

*Instructors:* Maj. Barnhill; Capts. Burch, Folkman, Fox, Hostetter,  
Johnson, Jones, Norton, Rickey, Schlight, Sutch

### *Prescribed Courses*

*Hist 111. Modern European History:* Complements the study of those phases of Western literary development; political science, and economics which have their roots in European history since the era of the French Revolution. Among the major topics considered are the rise of the urban-industrial society in Europe and its impact on the characteristic European political unit, the nation-state; the unifications of Italy and Germany and their impact on the 19th Century balance of power; the consolidation of European civilization on a world-wide basis; major ideological movements and their origins within the period; and the quest for international security from the coalitions of the Napoleonic era and the Congress of Vienna through the United Nations and the coalition of World War II. Emphasis is on understanding major events, movements, and historical trends. Semester Hours: 2½, fall.

*Hist 112. History of the United States:* A survey of American history from the colonial beginnings to the present. Emphasis is on the evolution of domestic, political and social forces, and the development of American foreign policy stressing the inter-relationship of the armed forces and American diplomacy. Prerequisite: Hist 111. Semester Hours: 3, spring.

*Hist 202. Military History:* An investigation of the scope and complexity of war. Includes the historical development and analysis of military principles, theory, trends, strategy, doctrine, weapons, organization, logistics, and tactics. Covers military affairs and civil-military relations with emphasis on the major wars of the 20th Century during which aerial warfare emerged. Prerequisites: Hist 111-112. Semester Hours: 2½, fall or 3, spring.

*The following courses are an option sequence. Cadets must complete either Hist 212, 222 or 232 to fulfill the prescribed requirements.*

*Hist 212. History of Latin America:* The discovery, conquest, and growth of Spanish and Portuguese America. Emphasizes political, social, economic, and cultural institutions since the Wars of Independence with particular stress on 20th Century problems. Prerequisites: Hist 111-112. Semester Hours: 2½, fall.

*Hist 222. History of the Far East:* The modern history of East Asia with particular emphasis on China and Japan. Stresses the fundamental cultural institutions of these areas and the political, social, and economic effects of 19th and early 20th Century relationships with Western powers. Implications of contemporary tensions are analyzed. Prerequisites: Hist 111-112. Semester Hours: 2½, fall.

*Hist 232. History of Russia:* Survey of the political and social development of the Russian nation with equal emphasis on Imperial Russia and the Soviet Union. Covers the Bolshevik Revolution, Marx-Lenin doctrine, growth of the Communist State, and Soviet foreign relations since World War II. Prerequisites: Hist 111-112. Semester Hours: 2½, fall.

### ***Enrichment Courses***

*Hist 351. United States Diplomatic History:* A survey of American diplomatic history from the Revolution to the present. Emphasis is on the evolution of fundamental policies and their objectives. The Monroe Doctrine, Freedom of the Seas, the Open Door, and Pan Americanism are examined in their relation to such national objectives as security, expansion, and neutrality. Attention is also focused on the political, economic, and traditional factors which have shaped the conduct of American foreign policy. Prerequisites: Hist 111-112. Semester Hours: 2½, fall or 3, spring.

*Hist 355. History of Military Thought:* Historical investigation of the ideas of selected major military thinkers ranging from Machiavelli to Douhet and their impact on the development of military doctrine. Includes a series of special lectures by members of the department, reporting on the results of personal research in military history. Prerequisites: Hist 111-112 and Hist 202. Semester Hours: 3, spring.

*Hist 361. History of Civil-Military Relations:* An analysis of the constitutional, political, economic, and social ramifications stemming

from the rise of the nation-state; the emergence of national armies; and the evolution of total war. Prerequisites: Hist 111-112 and Hist 202. Semester Hours: 2½, fall.

*Hist 471. Proseminar in Recent Military History: The Theory and Employment of Airpower:* Readings and discussion for First Classmen electing this course for the airmanship option. Traces the evolution in airpower doctrine and the employment of aircraft as a weapon system during and since World War II. U.S. air doctrine is studied in some depth. An examination of the employment of airpower in small wars and limited military operations, including guerrilla warfare, brings the evolution into timely focus. Prerequisites: Hist 111-112 and Hist 202. Semester Hours: 2½, fall or spring.

*Hist 551-552. Diplomatic History Seminar:* A graduate-level course for cadets with a special aptitude for history designed to augment their capacity for future study. Explores in depth selected topics in American diplomacy to provide a fuller understanding of the complex factors surrounding each. The objective is to develop the ability for intelligent analysis of foreign affairs. Prerequisites: Hist 111-112. Semester Hours: 2½, fall or 3, spring.





## ***Division of Social Sciences***

*Division Chairman:* Col. Wayne A. Yeoman

The Division of Social Sciences offers courses in economics, geography, law, political science, and psychology. These courses are designed to provide understanding of the contemporary national and international environments, to furnish background for progression to eventual command and staff positions affecting policy, and to instill a lasting interest in the social sciences leading to further education and self study. Included in the prescribed curriculum are 31½ semester hours in the social sciences. Cadets who are interested in this subject may pursue either a Major in International Relations or a Major in Military Management. Both of these majors require 18½ to 20½ semester hours of enrichment courses above the prescribed curriculum.

## ***Department of Behavioral Sciences***

*Professor and Head of Department:* Col. Herman F. Smith

*Associate Professors:* Lt. Col. Wojdyla; Majs. Butler, Phillips, Stockhouse, Walter

*Assistant Professors:* Capts. Andrews, Brown, DesIslets, Hovey, Holloman, Kaapke, Mills

*Instructors:* Capts. Graves, Hooper, McDonough, Raful, Sexson

### ***Prescribed Courses***

*Beh Sci 203. General Psychology:* Study of determinants of individual behavior in development toward physical, psychological, and social maturity. Examination of physiological factors, perceptual processes, motivational forces, learning characteristics and conditions, personality concepts, and social influences with consideration of applicability to Air Force leadership. Semester Hours: 2½, fall or spring.

*Beh Sci 302. Human Relations in Management:* Study of basic management functions with primary emphasis on group dynamics and the development of knowledge, skills, and attitudes necessary to understanding human situations and taking action. Develops an understanding of contributions of the social sciences and other sources in the formulation of administrative-organizational theories. Considers the manager's responsibilities, supervisory and leadership

roles, communication patterns, motivation, formal and informal organization, and situational and environmental factors as they affect individual and group behavior. Administrative and organizational insight achieved through assigned readings, case method, and role playing. Prerequisites: Beh Sci 203 and 2nd or 3rd Class standing. Semester Hours: 2½, fall or spring.

*Beh Sci 303. Psychology of Family Relations:* Study of the transition from single to married life with emphasis on the Air Force environment. Investigates cultural factors, choosing a compatible mate, and inter-family relationships. Prerequisites: Beh Sci 203 and 2nd or 3rd Class standing. Semester Hour: ½, spring.

### ***Enrichment Courses***

*Beh Sci 282. Elements of Management:* Introduction to the field of management with emphasis on processes involved in the performance of fundamental managerial functions of planning, organizing, directing, coordinating, and controlling. A study of personnel management considering the procurement, development, maintenance, and utilization of a work force to accomplish the objectives of the organization. The case method of instruction is used extensively to give the student experience in the solution of actual case problems. No prerequisites are required. Semester Hours: 2½, fall or 3, spring.

*Beh Sci 355. Sociology:* Introduction to the scientific study of the influence of group life on human behavior. Includes the study of human relations in terms of culture, norms, socialization, primary groups, social stratification, collective behavior, population, family, city, minorities, industrial sociology, political sociology, criminal and delinquent behavior, and military sociology. No prerequisites are required. Semester Hours: 2½, fall or spring.

*Beh Sci 372. Applied Psychology:* Introduction to experimental design and psychological research methods with special application to Air Force problems of human behavior. Application of major psychological methods, principles and findings to solution of real problems such as cockpit design, marksmanship training, morale study, attitude and opinion assessment, propaganda analysis, accident prevention, personnel selection and evaluation. Includes lab. Prerequisites: Beh Sci 203. Semester Hours: 2½, fall or 3, spring.

*Beh Sci 482. Industrial Management:* Develops a knowledge of management principles as applied to programming, production, and

maintenance activities as found in civilian industry and the Air Force. Emphasis is placed on the Air Force concept of weapon system management which includes research and development management, test and evaluation programs, and monitoring of procurement and production programs. Typical Air Force case problems are analyzed and discussed. Prerequisite: Beh Sci 282 or 302. Semester Hours: 3, spring.

*Beh Sci 483. Labor-Management Relations:* Provides an understanding of the military-labor-management situations the student will face as a military manager. A survey of the management role in industrial relations, the public interest in national labor policy, and the role of the military in industrial relations. Selected case studies of current interest. No prerequisites are required. Semester Hours: 2½, fall or spring.

## **Department of Economics and Geography**

*Professor and Head of Department:* Col. Wayne A. Yeoman

*Associate Professors:* Lt. Cols. Jackson, Taylor; Maj. Caroom, Hansel, Pursley; Capt. Jones

*Assistant Professors:* Maj. Able; Capts. Ballantyne, Claiborn, Colbrunn, Fitzpatrick, Kilbride, Kott, Patton

*Instructors:* Maj. Castelli, Roberts; Capts. Duffett, Gilster, Schoderbek; Lts. Houston, Kain, Olson, Ronhovde

### **Prescribed Courses**

*Geog 141. Introduction to World Geography:* A systematic approach to the basic elements of geography. The physical landscape is introduced through earth-sun relationships, mathematical geography, earth measurements, map projections and interpretation. The earth is analyzed from the standpoint of climatic, vegetation, and soil factors and regions. Major land-form types and their distribution are related to this physical realm. Man's relationship to these physical conditions is described and evaluated through a world regional analysis of the human environment. Both the nature and pattern of the cultural environ are examined in their areal and national groupings. Emphasis is placed on the actions of man and the potentials of each region resulting from the bipartite relationship of the cultural and physical landscape. Semester Hours: 4, fall or spring.

*Econ 202. Economic Principles and Problems:* Emphasizes economic

principles and problems applicable to the mixed enterprise system of the United States. Concentrates on the following: the institutions and behavior patterns of various economic sectors represented in the national product accounts and use of the accounts as an analytical tool; the theory and mechanics of national income determination, fluctuation, and stabilization; the role of pricing, elements of supply and demand that affect prices; current pricing practices in the United States; and the theory and mechanics of international trade. Semester Hours: 2½, fall or 3, spring.

*Econ. 311. Economics of National Security:* A continuation of Econ 202. Primarily concerned with selected problems of a public policy nature that affect specific economic sectors; the elements of US economic conflict with the USSR; the economic foundations of US security; and alternative approaches to solution of basic economic problems. Prerequisite: Econ 202. Semester Hours: 2½, fall or 3, spring.

### ***Enrichment Courses***

*Econ 353. International Economics:* A survey of the nature and methods of international trade with emphasis in the following areas: the accounting system of the balance of international payments; the theory of international trade; the adjustment of international disequilibrium; the operation of foreign exchange markets; the implications of tariff protection, import quotas, and other governmental commercial policy devices. Special emphasis is given to the problems of free world survival. Includes an introduction to theories of economic development. Prerequisites: 3 semester hours Econ 202; or Econ 202 and Econ 311. Semester Hours: 2½, fall.

*Econ 362. Economics of Defense Management:* Includes first an examination of the revenue, expenditures, and debt management activities of government; fiscal policy, economic and equity effects of these activities. The second part relates these principles and findings to defense economics in terms of the direction and magnitude of national security expenditures and their structural (business) and economic impacts, to include mobilization, ready-alert, financing alliances, and war economics. Prerequisite: Econ 202. Semester Hours: 3, spring.

*Econ 451. Economics of the Soviet Bloc:* Provides an investigation and explanation of the underlying assumptions, principles, and struc-



ture of various economies in the Soviet Bloc. Includes an overview of these economies with regard to centralized command and economic strategy. Provides an analysis of the various physical settings, availability, and distribution of major natural resources and composition of population. Prerequisite: Econ 202. Semester Hours: 2½, fall.

*Econ 452. Economic Problems of the Developing Areas:* An introduction to the general theory and policies of economic development. Examines the classical and modern theories of development. Treats the problems involved in accelerating development in emerging countries and maintaining development in advanced countries. Attention is given to domestic and international policy issues and the prospects for general economic development. Prerequisites: 3 semester hours Econ 202, or Econ 202 and 311. Semester Hours: 3, spring.

*Econ 461. Quantitative Methods:* Combines rigorous microeconomic analysis with basic quantitative tools to provide solutions to specific resource allocation problems. Among the subjects included are frequency distributions, correlation, time series, input-output, linear programming, and decision theory. Prerequisites: Econ 202 and 311. Semester Hours: 2½, fall.

*Econ 463. Investments:* Introduction to the various investment media, life insurance, all types of bonds, preferred stock, common stock, investment companies (funds), commodities, and real estate. The characteristics, methods of analysis, and investment merits of each media are studied. Investigates the practical aspects of investing, such as security exchanges, buying and selling securities, using a broker, income tax considerations, individual investment program, use of trusts, etc. Prerequisite: Econ 202. Semester Hours: 3, spring.

*Econ 551. Intermediate Economic Theory I:* Comprises the first half of a two-semester course at the graduate level. Objective is to provide the cadet with a thorough knowledge of the concepts and issues of modern economic analysis. Emphasis is on substantive economic theory. Prerequisites: Econ 202, Econ 311, and one Econ enrichment course other than Econ 463. Semester Hours: 3, fall.

*Econ 552. Intermediate Economic Theory II:* Comprises the second half of a two-semester course at the graduate level. The objectives and emphasis are the same as for Econ 551. Prerequisite: Econ 551. Semester Hours: 4, spring.

*Econ 553. Economic Development: Theory and Determinants:* Comprises the first half of a two-semester course at the graduate level. A detailed investigation of the determinants of sustained economic growth. A thorough theoretical background is provided by a study of the development theories of the Classical, Neo-classical, Keynesian, and post-Keynesian schools. A consideration of current economic developmental factors emphasizing the maintenance and/or acceleration of economic growth which influence the economic and military alignment of developing areas. Prerequisites: Econ 202, Econ 311, and one Econ enrichment course other than Econ 463. Semester Hours: 2½, fall.

*Econ 554. Economic Development: Growth and Change in Developing Areas:* Comprises the second half of a two-semester course at the graduate level. The objectives and emphasis are the same as for Econ 553. Prerequisite: Econ 553. Semester Hours: 3, spring.

## **Department of Law**

*Professor and Head of Department:* Col. Christopher H. Munch

*Associate Professors:* Lt. Cols. Barnes, Kinevan

*Assistant Professors:* Lt. Col. Hamblen; Maj. Fahrney, Mashburn, Stevens; Capt. Frisby

*Instructors:* Maj. Kratochvil, Matthis, Ventura; Capt. Bruton, Cunningham

### **Prescribed Courses**

*Law 311. Introduction to Law:* Principles of elementary law, including contracts, torts, agency, property, negotiable instruments and persons. Prerequisites: Pol Sci 201, Econ 202, and Third Class standing. Semester Hours: 2½, fall.

*Law 312. Introduction to Law:* Principles of criminal law, criminal evidence, jurisdiction, conflicts of laws, international law of the armed forces abroad and personal estate planning. Prerequisite: Law 311. Semester Hours: 3, spring.

### **Enrichment Courses**

*Law 451. American Constitutional Law:* The historical background and case progress of American constitutional doctrine. Presents the judicial power as one of the moving forces in American economic, social, and political progress. Analyzes the legal theory of govern-

ment, the division of powers within the federal system, and the constitutional guarantees of personal freedoms under the law. Special emphasis is placed on a thorough understanding of our constitutional system of government, the influence of the Supreme Court in its development, and the role of the Court in the future. Prerequisites: Second Class standing; or, with permission of the department head, Third Class standing. Semester Hours: 3, spring.

*Law 461. International Law:* A foundation in the principles of public international law, including the origin and sources of the rules, the methods of enforcement, and present trends. Among subjects considered are: territorial jurisdiction, international crimes, treaties, international air law, the law of space, the law of the sea, the Geneva Conventions relating to war, the International Court of Justice, and the legal status of international organizations. Prerequisites: Second Class standing; or, with permission of the department head, Third Class standing. Semester Hours: 2½, fall.

*Law 462. Government Contracting:* A comprehensive study of contract law with special emphasis given to methods of government procurement, labor standards, taxation of government contractors, disputes, and judicial and non-judicial remedies of the parties. Prerequisite: Law 311. Semester Hours: 3, spring.

## Department of Political Science

*Professor and Head of Department:* Col. Wesley W. Posvar (on temporary duty at Harvard University)

*Professor and Acting Department Head:* Col. William G. McDonald

*Associate Professors:* Lt. Cols. Flannigan, Rechtschaffen; Majs. Bowman, Nelson, Scowcroft

*Assistant Professors:* Majs. Gausche, Konigsberg, Osato; Sq. Ldr. Walsh; Cpts. Freeman, Larsen, Pinckney, Puryear, Ries, Rosser

*Instructors:* Cpts. Coble, Daleski, Dowell, Green, Holtzclaw, Karam, Masson, McMahon, Poirier, Pustay, Tatum; Lt. Garvey

## Prescribed Courses

*Pol Sci 201. American National Government:* Theory, development, functions, and organization of government of the United States. Executive, legislative, and judicial branches are studied in terms of their nature, structure, powers, and procedures. An examination is made of the theory and basic institutions of American democracy,

including the Constitution, federalism, separation of powers, civil and political rights, and the party system. Particular attention is given to contemporary issues in American politics. Semester Hours: 2½, fall or spring.

*Pol Sci 202. Contemporary Foreign Governments:* The emergence and experience of constitutional government in Europe, the effect of Western ideologies and political forms on Oriental societies. Political institutions, constitutional systems, and legal structures are analyzed in Great Britain, France, Germany, USSR, Communist China, India, and Japan. The diversity of governmental forms and political forces is surveyed. Prerequisite: Pol Sci 201. Semester Hours: 3, spring.

*Pol Sci 411. International Relations:* An analysis of contemporary patterns of conflict and cooperation among the nation-states of the world. Leading theories and concepts of international relations are examined to explain and predict the actions and interactions of states. Major emphasis is given to the characteristics of the nation-state system, the instruments of national policy, and the controls of interstate relations. The participation of the United States in world affairs is treated by a survey of American foreign policy. Prerequisite: Econ 311. Semester Hours: 2½, fall.

*Pol Sci 412. Defense Policy:* An analysis of the relationships among military policy, foreign policy, and national security policy. The environment for formulation of defense policy is examined in terms of external threats, the American political climate, and the impact of military technology. The institutional machinery for making strategy is analyzed with emphasis on resource allocation in military planning and the utility of analytical techniques for investigating force requirements. Substantive issues of strategy are evaluated including deterrence, the roles of active and passive defense, arms limitation, internal defense problems, and collective defense. Prerequisite: Pol Sci 411. Semester Hours: 3, spring.

### ***Enrichment Courses***

*Pol Sci 351. Political Parties and the Democratic Process:* An examination of the dynamics of the legislative and executive processes. Emphasis is placed on the role of political parties, interest groups, and individual citizen initiative. Executive functions and responsibilities and the relationship between the executive and legislative



processes are studied. By intensive use of the case study method, a thorough analysis is made of the complex facets of policy making and policy implementation. Prerequisite: completed or enrolled in Pol Sci 201. Semester Hours: 2½, fall.

*Pol Sci 352. Political Theory:* A critical study of the mainstreams of political thought which are basic to the understanding of national and international political movements and governmental actions. The development of constitutional thought as well as absolutist and totalitarian thought is traced from Greek antiquity to the present. The relationship between basic theoretical assumptions and concepts of government such as community, justice, freedom, order, law, and rule. Prerequisite: completed or enrolled in Pol Sci 201. Semester Hours: 3, spring.

*Pol Sci 354. International Organization and Military Security Systems:* An examination of the role of international organization in the politico-military security of nation-states. Institutional arrangements and processes of contemporary international security systems are viewed as instruments of national policies. The case study method is employed to analyze universal and regional organizations with respect to their value, both in the maintenance of military security and as instruments for carrying out necessary adjustments in the international status quo. Prerequisite: completed or enrolled in Pol Sci 202. Semester Hours: 2½, fall.

*Pol Sci 452. Soviet Union and the East-West Conflict:* An analytical study of the patterns of conflict between the foreign policies of the United States and the Soviet Union. The formulation and execution of policy are investigated, as well as specific strategies and tactics employed by the Soviet Union. Major patterns of tension between the Western powers and the Communist Bloc are analyzed to develop a thorough understanding of East-West relationships throughout the world. Prerequisite: Pol Sci 202 or 352, or permission of the department. Semester Hours: 3, spring.

*Pol Sci 453. Problems of Developing Areas:* A critical analysis of recent political and military developments in developing areas. Factors such as nationalism, modern ideologies, elite classes and the new middle class, population pressure, and the impact of modernization on traditional societies are related to political processes and stability. The dynamics of evolution and revolution provide the background for a study of the protracted conflict between the West and the Commu-

nist Bloc occurring in developing areas. Emphasis is placed on counterinsurgency warfare and its role in present and future international politics. Prerequisite: Pol Sci 202. Semester Hours: 2½, fall.

*Pol Sci 454. Politics of the European Community:* A critical examination of the political developments in Western Europe from the Marshall Plan to the present. The potentialities of a united Europe as a "third force" are analyzed through a consideration of both institutional elements and political strategies of the Western European nations. Prerequisite: Pol Sci 202. Semester Hours: 3, spring.

*Pol Sci 461. Comparative Military Policy:* A comparative study of underlying causes and the content of military policies of selected states. An analytical framework is developed for comparison of military policies in the light of varying political, economic, and cultural factors. Relationships among military policy, the political-economic-cultural environment, and the military decision-making process are then examined for four major powers: Great Britain, France, the Soviet Union, and Communist China. In addition, a selective study is made of military elitism in underdeveloped areas. Prerequisite: Pol Sci 202. Semester Hours: 2½, fall.

*Pol Sci 462. The Formulation of Military Strategy:* An examination of the determinants and choices of US military strategy. Emphasis is placed on policy-making machinery, the planning function, selected national strategies, and allocation of resources. Analytical tools for decision-making, such as operations analysis and use of electronic aids in determining force requirements, are evaluated in the larger context of the strategic environment. Strategic intelligence, political factors, and enemy intentions are related to the development of strategy. Relationships among strategic factors are demonstrated through student participation in the *Strategic Analysis and Force Evaluation Game*. Prerequisites: Pol Sci 411 and permission of the department. Semester Hours: 3, spring.

*Pol Sci 561. Contemporary Political Ideas:* An intensive study of contemporary political ideas which influence state action in the international scene. The political thought of modern statesmen, philosophers, religious leaders, natural scientists, and social scientists is studied in depth for its content and effect on government and peoples. A detailed analysis is made of recent developments in the theoretical bases of totalitarian communism and modern constitutional systems. Prerequisite: Pol Sci 352. Semester Hours: 2½, fall.

*Pol Sci 563. International Politics: Theories and Concepts:* An advanced study of the theories, approaches, and methods of analysis of the interaction of states, international political systems, foreign policies, and capabilities of states. Special emphasis is placed on current theoretical writings in the field, as well as on contemporary tools of analysis being developed for research in the social sciences. Prerequisites: completed or enrolled in Pol Sci 411 and permission of the department. Semester Hours: 3, fall.

*Pol Sci 564. International Politics: Problems in the Maintenance of Security:* A comprehensive analysis of major problems in the maintenance of international peace and security. The seminar method is used for advanced study of contemporary instruments of international politics such as negotiation, collective security, arms control, and regional development. Each members of the seminar undertakes a detailed investigation of a specific topic, and produces a paper showing evidence of mature research. Prerequisites: completed or enrolled in Pol Sci 411 and permission of the department. Semester Hours: 4, spring.

*Pol Sci 572. Government and Politics in the Communist Bloc:* An intensive study of government and politics in the Soviet Union and other countries of the Communist Bloc. The methods of political control of government and society are investigated and special attention is given to industrial and agricultural development and political control of the military hierarchy and military policy. Procedures for handling problems of nationalism and federalism within the USSR and the Communist Bloc are analyzed and evaluated. Prerequisite: Pol Sci 202. Semester Hours: 3, spring.





CLASS	CURRENT STRENGTH	ENRICHMENT PARTICIPATION		BASIS OF PARTICIPATION		OVER LOAD ONLY	
		SUBSTITUTE & OVER LOAD NO.	%	NO.	%	NO.	%
1940	511	347	72	197	39		
1941	553	394	71	257	47		
1942	677	523	77	255	38		
1943	737	540	74	261	26		
1944	2478	1824	74	970	39		
		UNDER GRADUATE		GRADUATE			
		EX. ELEC SUB		EX. ELEC SUB			
AERONAUTICS		36	326	6	13		
ASTRONAUTICS		25	284				
ELECTRICAL ENGINEERING		41	212	6	12		
ENGLISH		47	285	1			
FOREIGN LANGUAGES		75	353				
HISTORY		32	75				
LAW		22	121				
MATHEMATICS		47	97	1	5		
MECHANICS		131	760				
NAVIGATION		240	418				

## UNDERGRADUATE MAJORS

Through the enrichment program, the Academy offers majors in four undergraduate subject areas: International Relations, Military Management, Basic Science, and Engineering Science. The majors are designed to enhance the cadet's knowledge in his chosen subject area and to contribute to the effectiveness of his career as an Air Force officer. A major is particularly recommended for cadets who desire to prepare for graduate study.

Cadets majoring in a subject area must meet prescribed course requirements in addition to selected enrichment courses. They may validate certain prescribed courses and take selected enrichment courses of greater depth and difficulty in lieu of the prescribed. Other enrichment courses are required in addition to all prescribed courses in the respective fields of study.

Semester-hours credit, particularly in science courses, may vary slightly according to validation credit awarded and work completed by the individual cadet. The total semester hours required in each major are: International Relations —  $18\frac{1}{2}$  to  $20\frac{1}{2}$ ; Military Management —  $18\frac{1}{2}$  to  $20\frac{1}{2}$ ; Basic Science —  $18\frac{1}{2}$  to  $21\frac{1}{2}$ ; and Engineering Science —  $21\frac{1}{2}$  to 24. The enrichment course requirements for each major are as follows:



## MAJOR IN INTERNATIONAL RELATIONS

Hist 351	US Diplomatic History
Pol Sci 352	Political Theory
Pol Sci 354	Int Org & Mil Sec Systems
Beh Sci 355	Sociology
Econ 353	International Economics
Law 461	International Law

In addition to the above required courses, a course area concentration in either the Soviet Bloc, Europe, Latin America or the Far East must be completed. Each area concentration consists of the prescribed history course in that area, plus one enrichment course in foreign language, one in economics, and one in political science which pertain to the area.

## MAJOR IN MILITARY MANAGEMENT

Beh Sci 282	Elements of Management
Beh Sci 355	Sociology
Beh Sci 372	Applied Psychology
Beh Sci 482	Industrial Management
Beh Sci 483	Labor-Management Relations
Hist 355	History of Military Thought
Econ 362	Economics of Defense Management
Econ 461	Quantitative Methods
Law 462	Government Contracting

## MAJOR IN BASIC SCIENCE

Math 151	Statistics
Math 251	Differential Equations
Chem 353	Theoretical Inorganic Chemistry
or	
Chem 351	Physical Chemistry I
Chem 352	Physical Chemistry II
Phys 452	Principles of Modern Physics
Phys 453	Principles of Nuclear Physics
Phys 454	Neutron Physics

In addition, four elective courses are required which must be selected from the following: Math 252, Chem 351, Chem 352, Chem 353, Math 352, Nav 351, Phys 454, Phys 455, Physio 451, Astro 452, Astro 454.

## MAJOR IN ENGINEERING SCIENCE

The following enrichment courses should be taken as substitutes for the prescribed:

Math 161	Calculus and Analytic Geometry
Math 162	Calculus, Analytic Geometry, and Intro to Differential Equations
Phys 452	Principles of Modern Physics
Aero 351	Introduction to Thermodynamics
Aero 352	Thermodynamic Applications
Aero 451	Fluid Mechanics
Aero 453	Supersonic Aerodynamics
EE 361	Circuit Analysis
EE 362	Intermediate Electronics
Mech 361	Engineering Mech, Vectors
Mech 362	Mechanics of Materials
Science 350	Electro-Mech Systems Lab
Astro 451	Astro dynamics
Astro 453	Space Technology

The following additional enrichment courses must be completed:

Math 251	Differential Equations
Math 352	Digital Computer Programming
Phys 453	Principles of Nuclear Physics
Aero 353	Introduction to Heat Transfer
Mech 355	Applications of Solid State
Aero, EE, Mech or Astro 464	Design

The academic option periods in the First Class year will be filled with the following:

Astro 452	Linear Control System Analysis
or Mech 454	Advanced Dynamics and Vibrations
and Astro 454	Ballistic and Space Vehicle Guidance

In addition, two elective courses are required which must be selected from the following: Aero 456, Mech 454, Astro 452, EE 455, Chem 551, Mech 451, EE 453, EE 456, Math 252, Math 451. (One must be selected from the first four courses.)



## THE AIR FORCE ACADEMY LIBRARY

*Director of the Library:* Lt. Col. George V. Fagan

The Academy Library provides a well-balanced reference and reading collection in direct support of the educational mission of the Academy. It maintains all material usually found in leading liberal arts and engineering colleges and universities. Through carefully planned growth and the receipt of numerous gifts, the Library is expanding its reference and research collection in all areas. Emphasis is being placed in the fields of aerospace power and aeronautical history. A special collection of unique and rare items pertinent to the growth and development of the Air Force Academy is being developed.

Ultimately the Library collection will exceed 300,000 volumes. At present more than 175,000 items line the open shelves of the Library. The periodical reading section contains current issues of over 1,300 magazines and newspapers from all parts of the United

States and overseas. Almost 20,000 bound volumes of periodicals with appropriate indexes are available for reference and research. The map reference room contains 10,000 maps and atlases.

Covering more than 78,000 square feet of floor space, the Library occupies the largest portion of the north wing of Fairchild Hall, the academic building. A soaring spiral staircase provides the main access to the three floors of the Library. Eight hundred patrons, one third of the Cadet Wing, can be seated at one time. On the balcony overlooking the main reading room are study carrels for those cadets of the First Class who have attained the Superintendent's Merit List. Individual nameplates are affixed to each carrel as a means of recognition for outstanding scholarship and leadership.

The Library is utilized by a number of Government agencies as a source for scientific and technical report literature and for extended research by the faculty. The Library is a selective depository for United States Government documents and United Nations documents. Included in the Library holdings are a microfilm collection and a vertical file of pamphlet series, brochures, and similar materials directly related to all aspects of the curriculum. Special bibliographies in many subject areas and periodic annotated listings of current acquisitions are published by the Library in conjunction with the academic departments.

## ACADEMIC SERVICES

### Counseling and Administration

*Assistant to the Dean for Counseling and Administration:* Maj. Hiram C. Caroom

*Counselors and Administrators:* Capt. Malcolm E. Ryan, Basic Sciences; Maj. George E. Yale, Applied Sciences; Maj. Ross C. Alm, Humanities; Maj. Hiram C. Caroom, Social Sciences

The academic counselors and administrators assist the chairmen of the academic divisions in administering matters in their respective divisions. They serve as administrators for the four class committees. They monitor the work of faculty advisers who counsel cadets on academic programs, scheduling, grade deficiencies, and degree plans. Identification and academic guidance of exceptional students are primary functions of these officers. Cadet participation in the enrichment program is also monitored.



## Audio-Visual Services

*Director of Audio-Visual Services:* Lt. Col. William C. Flannigan

The Audio-Visual Services Directorate contributes to the support of effective learning and improvement of instruction by providing all instructional departments with a centralized source for the latest teaching materials, aids and related equipment. Included in this activity are the divisions of Graphics, Training Devices, and Film Library. Among the teaching devices developed are instructional manuals, workbooks, pictorials, charts, models, mockups, slides, films, and recordings. The modern classrooms are well equipped for effective use of all types of visual and sound teaching aids.

## Research Program

*Assistant Dean for Research:* Col. Bernard W. Marschner

*Director of Scientific Research:* Lt. Col. Roger R. Bate

*Director of Social Science and Humanities Research:* Lt. Col. George V. Fagan

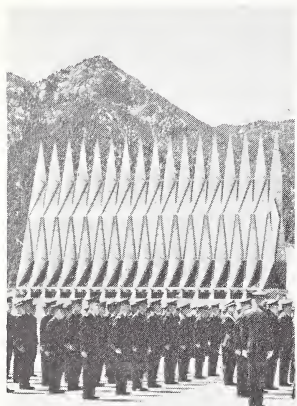
*Director of Instructional Research:* Maj. Franklin C. Butler

The research program at the Academy is designed to keep faculty members current in their special fields and to provide an opportunity for research to a limited number of cadets in the enrichment and graduate programs.

Several faculty officers are assigned to perform full or part-time research in the sciences, social sciences and humanities. Officers assigned to the instructional research branch evaluate new developments in instructional devices and techniques and suggest those which may be useful at the Academy. Promising new developments are tested experimentally prior to possible incorporation into basic instructional methods. Other important functions of instructional research are to administer a program in academic skills, including reading improvement taught to all Fourth Classmen, and to plan and operate an instructional closed circuit television system.

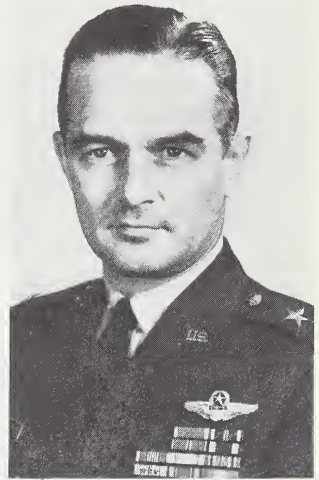
Headquarters USAF has designated the Academy as a location for a research laboratory detachment to work in conjunction with the Office of Aerospace Research. This detachment, manned by full-time research employees, will conduct research in chemistry and aerospace mechanics. Certain members of the faculty and cadets will participate in some of these research projects.

# The Airmanship Program



**Commandant of Cadets**  
**Brig. Gen. Robert W. Strong, Jr.**

*The airmanship program prepares and motivates the cadet for a career of leadership as an officer in the United States Air Force.*



## **AIRMANSHIP TRAINING**

Airmanship training provides experience in leadership, promotes professional attitudes, and provides the basic military knowledge required of an Air Force officer. The fulfillment of these objectives is the responsibility of the Chain of Command, both officer and cadet; the Directorate of Operations and Training, encompassing the Divisions of Training, Navigation, and Plans and Scheduling; and the Academy Planetarium.

### **Directorate of Operations and Training**

*Director of Operations and Training:* Col. James H. Heaberg  
 (Course directors, instructors, and plans and scheduling officers are listed under the Personnel Directory.)

### **Training Division**

*Chief of the Training Division:* Lt. Col. George A. Brown

#### **Prescribed Courses**

*Mil Tng 100. Basic Cadet Training:* Transition training from civilian to military life. Indoctrination in the overall Academy program, cadet regulations, the Honor Code, manual of arms, drill, customs and courtesies, and other general military subjects. Introduction to basic Air Force weapons, firing course (M-1 rifle and .38 caliber pistol), and survival training exercise in the Rocky Mountains. Simulated flight in an altitude chamber and the award of aircraft



passenger card. Introduction to the care and use of flying equipment and survival gear. Orientation flights and emergency procedures in the T-29 twin-engine navigation aircraft and the T-33 jet aircraft. Semester Hours: 7½, summer.

*Mil Tng 101. Fourth Class Command Training:* Instruction in the practical application of drill, ethics, dating, and command subjects in cadet life. Semester Hour: ½, fall or spring.

*Mil Tng 111. National Security and the Armed Forces:* Study of the national security organization, the military instrument of national power and the armed forces, in preparation for the Zone of Interior Field Trip. Semester Hours: 1½, fall or spring.

*Mil Tng 200. Field Study of the Armed Forces:* Field trip of 6 weeks within the United States to Army and Navy installations and the combat and support commands of the Air Force. Semester Hours: 4, summer.

*Mil Tng 201. Third Class Command Training:* Provides the cadet with an introduction to career planning as an Air Force officer to include such items as pay, allowances, promotions, schools, and education benefits. Includes general instruction on the functions of various activities which are found on a typical Air Force base, such as personnel, materiel, and administration. Semester Hour: ½, fall.

*Mil Tng 211. Foreign World Air Forces:* Study of contemporary world air forces of Allied, Communist, and uncommitted nations. Covers organization, equipment, and where applicable the relationship of air forces to pacts and treaty organizations. Provides the cadet with background information on foreign air forces in preparation for the Field Study of Overseas Areas. Semester Hour: ½, end of spring semester.

*Mil Tng 300. Field Study of Overseas Areas:* Field trip of 3 weeks to pivotal areas in Europe, South America or the Far East to observe global air power of the US Armed Forces and armed forces of other nations. An insight into the economic, political, and social aspects of the various countries visited is also gained on the trip. Semester Hours: 3½, summer.

*Mil Tng 301. Second Class Command Training:* Provides the cadet with current, specific information to assist him in planning his career in the Air Force and choosing the career area he desires. Promotion opportunities and career field progression are explained.



A five-hour seminar on leadership within the Cadet Wing is conducted. All aspects of cadet leadership in which a First Class cadet officer should be conversant are introduced and discussed. The course allows the cadet to apply the basic principles of leadership in an effective manner within the Cadet Wing organization. Semester Hour:  $\frac{1}{2}$ , spring.



*Mil Tng 302. Military Instructor Training:* Prepares the cadet for future instructional duties by developing the necessary instructor skills required to effectively complete his duties in the Basic Cadet Training Program as a First Classman. Includes speech techniques, lesson planning, methods of instruction, training aids utilization, and two practice teaching exercises. Semester Hour:  $\frac{1}{2}$ , spring.

*Mil Tng 310. Duty with an Air Force Unit:* Individual assignment to squadron grade position with an operational unit of the Air Force for 2 weeks. Assignment may be at a home base in the United States

or overseas. In-service training permits practical application of leadership principles. Semester Hours: 1½, summer.

*Mil Tng 311. Employment of Aerospace Power:* A study of offensive and defensive employment of the USAF aerospace power. The guidance, planning, support, and procedures incident to generating and launching the USAF combat forces. Semester Hours: 1½, fall or spring.

*Mil Tng 400. Duty with an Underclass:* Preparation for and participation in supervisory and instructional duties of approximately 4 weeks with the Basic Cadet Training Group; or preparation for and command or staff duty with the Third Class on Field Study of the Armed Forces. Semester Hours: 3, summer.

*Mil Tng 401. First Class Command Training:* Provides the cadet with an insight into aspects of service life as a second lieutenant through means of seminar discussions with experienced officer instructors. Includes several hours of lectures by visiting authorities on subjects pertinent to newly commissioned officers not previously covered in other programs. Semester Hour: 1, fall or spring.

*Mil Tng 402. Aerospace Weapons and Space Systems:* A classified course covering the technical and employment details of aerospace systems. Space programs of the National Aeronautics and Space Administration are included. Department of Defense ballistic missile programs and space systems are discussed in detail. Course stresses up-to-date information on progress in the fielding of ballistic missiles and space systems. Semester Hour: ½, fall or spring.

*Airmanship 410.* Ten flying hours in light aircraft and ten classroom hours in related ground school subjects. Implementation of this course is dependent upon acquisition of aircraft and approval of airfield facilities. Semester Hour: ½, summer, fall or spring.

### ***Enrichment Courses***

Enrichment courses are offered those cadets desiring basic or advanced qualification in light aircraft flying, glider flying, and parachute jumping. These voluntary courses are conducted through the Cadet Activities Program, Air Training Command, and the US Infantry School at Fort Benning, Georgia.

## Navigation Division

*Chief of the Navigation Division:* Lt. Col. Jamieson H. P. Newell

### **Prescribed Courses**

*Nav 110. Introduction to Flying:* Introduction to the care and use of flying equipment and survival gear. Orientation flights and emergency procedures in the T-29 twin-engine navigation aircraft and the T-33 jet aircraft. Semester Hours for this course are included in Mil Tng 100.

*Nav 411. Navigation Orientation:* Introduction to the basic concepts of navigation to include an applicable knowledge of fundamental skills. Includes airborne and trainer laboratory periods, as well as planetarium demonstrations to augment classroom instruction. Flying training consists of six 5-hour missions in T-29 aircraft. Designed to motivate students toward a flying career and to assure an appreciation of responsibility and requirements of a rated specialty. Cadets must take either Nav 411 or Hist 471 to fulfill requirements of the Airmanship Option. Semester Hours: 2½, fall or spring.

### **Enrichment Courses**

*Nav 351. Descriptive Astronomy:* The earth as a planet and its motions within the solar system. An understanding of the motions of all members of the solar system including moons, planets, comets, and the sun, and the laws governing these motions. The historical development of astronomy from earliest times to the present. Instruments of measurement and observations, and methods of reducing observations to scientific fact. Semester Hours: 2½, fall or spring.

## Plans and Scheduling Division

*Chief of the Plans and Scheduling Division:* Maj. John C. Reed

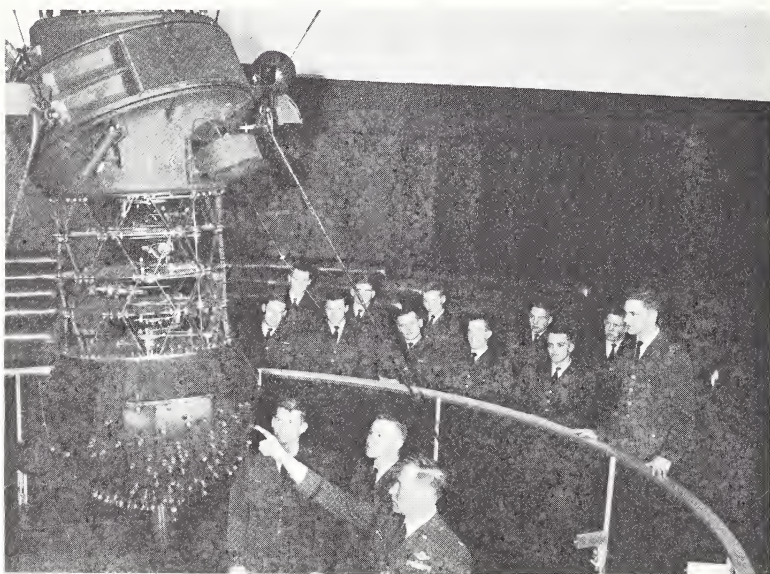
This division coordinates and schedules the Military Training Program including all domestic and overseas trips; prepares schedules for Cadet Wing activities at the Academy and plans for official cadet absences from the Academy; programs summer training and arranges flight support and flying training programs as required to support the curriculum.



## The Academy Planetarium

*Director of the Planetarium:* Lt. Col. Wallace E. Moore

The Planetarium is used to teach celestial theory and star identification to cadets in their study of navigation. An elective course in descriptive astronomy utilizes this instrument as its primary laboratory. The giant multiple projector of the Planetarium can portray the panorama of the heavens on the building's 50-foot opaque aluminum dome. The instructor operates the projector from a master control board to simulate the effects he desires. The projector can



accomplish realistic simulation of numerous movements that take place in the sky such as comets, meteor showers, the northern lights, constellations, sunrise and sunset, and the planets in orbit. All stars visible to the eye, from the brightest to the dimmest, can be duplicated. Also, the stars can be put through rapid changes, such as moving forward or backward in time to show their past or future positions.

In addition to using the Planetarium for cadet instruction, the Planetarium staff presents lectures and demonstrations to members of other educational institutions and the general public.



## CADET WING TRAINING

*Wing Air Officer Commanding:* Col. Victor J. Ferrari

(Group and Squadron Air Officers Commanding are listed under the Personnel Directory.)

Training in command and staff functions within the Cadet Wing affords cadets the opportunity to practice leadership techniques and provides them situations for development of character and discipline. Supervision of this program is the responsibility of Group and Squadron Air Officers Commanding. These officers monitor the progress of all cadets assigned to their respective units in every facet of cadet life. They give particular attention to the guidance, discipline, and motivation of cadets under their command. Military bearing of the cadets is developed through drill, parades, and inspections.

## CADET COUNSELING

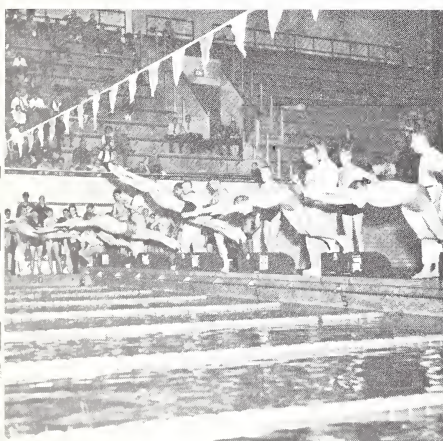
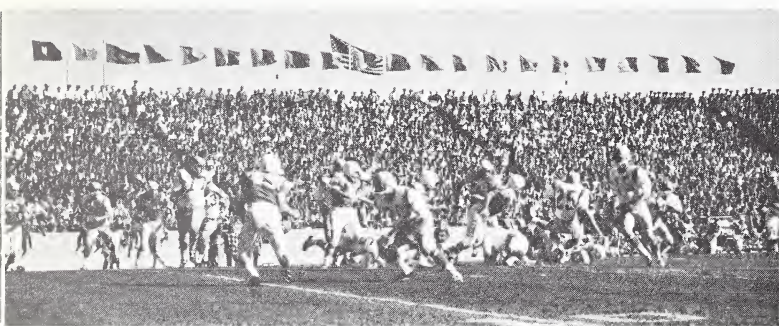
*Director of Cadet Counseling:* Maj. Bernard M. Smith

The Cadet Counseling Service offers information and assistance to cadets with personal, social, academic, career, and general adjustment problems. Professional counselors are available to aid the cadet in better understanding of himself, in making personal decisions, and in learning to solve future personal problems.

Much of cadet counseling is self-initiated. All counseling records are held in the strictest confidence. A cadet discusses with the counselor whatever problems bring him to the office. In the initial interview the counselor may explain the kinds of help available. Succeeding interviews may be required to help the cadet plan an improved approach to his problem and integrate the information gained. Referrals may be made to other sources of help and information. Occasionally, particularly in problems of study skills, cadets may be scheduled in small groups for discussion.

The Counseling Office is open to cadets at all times. A collection of materials is at hand in the Career Reading Room. Counselors are available for either personal appointment or telephone contact at the cadet's convenience.

# The Athletic Program



**Director of Athletics**  
**Col. M. L. Martin**

*The program of physical education and athletics is designed to develop leadership characteristics, physical ability, and skills in a variety of sports.*



**Department of Physical Education**

*Head of Department of Physical Education:* Lt. Col. John S. Sparks  
 (Instructors are listed under the Personnel Directory.)

Physical education includes course instruction and competition in intramural athletics. Each cadet is required to compete either in intramural or intercollegiate athletics during the fall, winter, and spring seasons.

***Prescribed Courses***

*PE 110. Basic Physical Training:* Prepares the basic cadet for a strenuous program of physical education and athletics by developing physical strength, endurance, agility, and coordination through conditioning exercises, running the obstacle course, and participating in recreational sports. A physical ability examination and a swimming test are given to each basic cadet. Special courses in swimming and conditioning are given to those cadets who show need for improvement. Semester Hours: 2, summer.

*PE 101. Gymnastics, Wrestling, Boxing, Swimming:* Instruction is conducted in each of these sports. Semester Hours: 1, fall or spring.

*PE 103. May Period Activities:* Cadets elect one of the following: tennis, golf, squash, or handball. Semester Hour:  $\frac{1}{4}$ .

*PE 105-106. Competitive Athletics:* Participation in intramural



and/or intercollegiate athletics. Semester Hours: 1, fall and 1, spring.

*PE 201. Tennis, Golf, Physiology of Exercise, Squash and Handball:* Instruction is conducted in each of these activities. Semester Hour: 1, fall or spring.

*PE 205-206. Competitive Athletics:* Participation in intramural and/or intercollegiate athletics. Semester Hours: 1, fall and 1, spring.

*PE 301. Unarmed Combat, Handball, Squash, Instructor Training:* Instruction is conducted in each of these activities. Semester Hour: 1, fall or spring.

*PE 305-306. Competitive Athletics:* Participation in intramural and/or intercollegiate athletics. Semester Hours: 1, fall and 1, spring.

*PE 401. Tennis, Golf, Physiology of Exercise, Elective:* Instruction is conducted in each of these activities. Electives include fencing, scuba, diving, and other sports. Semester Hour: 1, fall or spring.

*PE 403. May Period Activities:* Cadets will elect or be assigned one of the following: physical fitness, extra instruction (in previous subjects) or an elective to include advanced instruction in handball, squash, tennis, or golf. Semester Hour:  $\frac{1}{4}$ .

*PE 405-406. Competitive Athletics:* Participation in intramural and/or intercollegiate athletics. Semester Hours: 1, fall and 1, spring.

### ***Intramural Athletics***

Intramural participation provides the cadet with broad experience in sports competition. First and Second Classmen gain experience in organizing, coaching, and officiating through serving on intramural teams. Each cadet squadron provides a team in every sport.

The annual schedule of intramural athletics is as follows:

*Fall* — football, soccer, field hockey

*Winter* — boxing, wrestling, water polo, handball, squash

*Spring* — rugby, basketball, swimming, lacrosse, judo

### ***Elective Activities***

Near the close of the spring semester of the Fourth Class year, a cadet may choose to receive instruction in fencing, handball,



squash, diving, life saving, or some other elective. Special reconditioning courses are given throughout the year for cadets who may in some way be incapacitated. Extracurricular physical education is available through cadet club activities in sports such as judo and lacrosse.

## Department of Intercollegiate Athletics

*Assistant Director for Intercollegiate Athletics:* Mr. Robert C. James  
(Coaches are listed under the Personnel Directory.)

Intercollegiate athletics provide a source of competition for a large number of cadets to compete in individual or team sports against colleges and universities.

A total of 16 intercollegiate sports are available to the cadets:

*Fall* — football, cross-country, soccer, modern pentathlon

*Winter* — basketball, fencing, gymnastics, pistol, rifle, swimming, skiing, wrestling

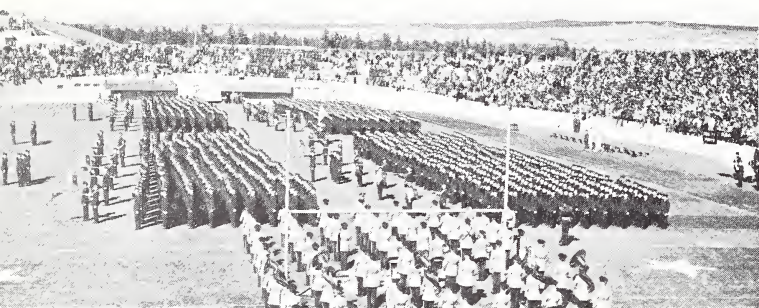
*Spring* — baseball, golf, tennis, track

The Academy's varsity teams are known as the Falcons. During the 1963-64 season the Falcons will compete with leading schools from all parts of the nation. The following 1963 football schedule is an example of the strong intersectional competition scheduled in all sports:

<i>Home Games</i>	<i>Away Games</i>
21 September — Washington	5 October — SMU at Dallas
28 September — Colorado State	12 October — Nebraska at Lincoln
26 October — Boston College	19 October — Maryland at College Park
9 November — UCLA	2 November — Army at Chicago
23 November — Colorado	16 November — New Mexico at Albuquerque

All home games are played in the new 40,000 seat stadium located on the site of the Air Force Academy. The Air Force Academy Foundation, an organization of national civic leaders, raised funds to construct the stadium. Generous donations were given by personnel throughout the Air Force. Many people from all over the country who are interested in the Academy and its athletic program also donated.

# Cadet Life Activities



## **The Cadet Way of Life**

The cadet way of life differentiates the cadet from his undergraduate contemporary in a civilian college or university. This way of life in effect includes all of the activities and influences which make up the cadet's environment. It requires a rigid daily schedule and conformity to strict discipline and rules of conduct. During his four years at the Academy, a cadet progresses from follower to leader and his privileges increase with his responsibilities. The Fourth Classman has virtually no privileges and is responsible only for himself, while the First Classman is subject to minimum supervision and has broad responsibility in managing the Cadet Wing.

## **Basic Cadet Training**

Immediately after entering the Academy, a young man receives an indoctrination in the cadet way of life through a seven and one-half week basic cadet training program. The purpose of this program is to develop young men with varied backgrounds into thoroughly disciplined cadets. Most of the training and instruction is conducted by First Classmen and supervised by Air Officers Commanding.

Basic cadets receive instruction in basic military subjects such as drill, manual of arms, weapons, customs and courtesies. They are given indoctrination rides in jet and conventional aircraft and undergo strenuous physical conditioning. The basic cadet training program is climaxed by a realistic survival exercise. With limited rations and minimum equipment, the cadets sustain themselves while traversing the rugged terrain of the Rampart Range on their way back to the Academy.

The basic cadet training program keeps the cadets busy from reveille to taps (5:30 a.m. until 10:30 p.m.). This fast, disciplined pace is a difficult transition for many of the cadets who have been accustomed to a relaxed life. The pressures involved in the program teach the cadet discipline and self-control as well as test his ability to perform effectively under stress. The Academy wants to discover as soon as possible those cadets who are not capable of withstanding the type of pressures to which they may be subjected later as Air Force officers. Only those young men with the greatest desire and resolve can expect to successfully complete the basic cadet training program.



Upon successful completion of this training, the basic cadets are accepted into the Cadet Wing as full-fledged cadets and the term "basic" is dropped. Although the extreme pressure of their military training is relaxed during the academic semesters, the rest of the Fourth Class year is far from being easy. Throughout this first year at the Academy, the cadets are subject to stern discipline and high standards of military bearing.

## **Leaves and Special Privileges**

Cadets of the upper three classes are granted leave during the summers, varying from two to four weeks depending upon the schedule for their class. Cadets have approximately two weeks of leave during the Christmas holidays and four days during the spring. They are free from duty on approximately seven national holidays during the year. Emergency leave may be granted to a cadet whose emergency involves a member of his immediate family. Other requests for special leave are considered on an individual basis.

Special privileges to leave the Academy on weekends are based on a gradual transition from the status of a basic cadet to a second lieutenant. Privileges are progressively increased by class in recognition of added maturity and responsibility. Cadets of the Fourth Class are very restricted in their privileges, while First Classmen are relatively free on weekends.

Cadets of the Second, Third, and Fourth Classes are not permitted to own automobiles nor to maintain them at the Academy. This privilege may be granted to cadets during their First Class year.

## **Visits to Cadets**

Parents will not have an opportunity to visit their sons until after the fifth week of basic cadet training. It is recommended that visits be delayed until the completion of this seven and one-half week training. After that time, parents and friends may visit on Saturday afternoons and evenings, Sunday afternoons, and evenings preceding holidays.

## **The Cadet's Day**

During the academic year a cadet's normal weekday begins at 6:30 a. m. reveille. After reveille he prepares his half of the two-man room for morning inspection. Breakfast is from 7:05 to 7:30.



He attends classes or has study periods from 8:00 to 12:00. At 12:15 he marches to the dining hall for lunch. After lunch he attends classes or has study periods from 1:05 to 4:20.

Unless he is participating in intercollegiate athletics, he practices or plays on a squadron intramural team two afternoons a week from 3:45 to 5:00. The other three afternoons during the week he participates in drill or extracurricular activities or has study periods. He may volunteer for extra academic instruction from 5:10 to 6:05 each afternoon during the week.

Dinner is from 6:30 to 7:00. At 7:15 the cadet must be in his room for study until 10:45. Visits to the library are permitted during study time. Unless he is permitted late lights he must be in bed with lights out at 11:00 taps.

First Classmen have more freedom in their evening schedule. They are not required to maintain a strict study schedule and have liberal late lights privileges.

Cadet Wing parades are held on Saturday mornings at 11:20 on the parade ground east of the academic area during the fall and spring. Visitors are welcome to attend. A parking area and bleachers are available for visitors.

Following Saturday morning parades the cadet is free from duty. On Saturday afternoons and evenings and on Sunday afternoons, he may entertain guests in Arnold Hall, the cadet social center.

## **Pay and Allowances**

An Air Force cadet receives his education at government expense. In addition to an allowance for food, he receives \$111.15 per month which is credited to his account to pay for academic supplies, clothing, and personal expenses. Quarters and medical care are provided. A cadet's pay and allowances are considered sufficient for him to be self-supporting, provided he is economical. The pay is not sufficient for a cadet to cover any debts contracted prior to entrance, to send money home to his parents, or to spend for luxury entertainment or expensive personal items. The money is carefully allocated monthly to cover the cadet's obligations with only a minimum remaining for personal use. With proper economy during his four years at the Academy, a cadet will save enough to purchase the uniforms he will need as an officer upon graduation.

## **Insurance**

Government-sponsored insurance is not provided for cadets. A special commercial insurance plan is available to all cadets on a voluntary basis. The plan offered is \$20,000 term insurance and \$10,000 accidental death, dismemberment, loss of sight, and disability benefits. The total \$30,000 of insurance is available for \$3.50 per month. This amount is set aside in the Cadet Budget from the cadet's monthly pay. The policy is free of conditions or restrictions as to occupation, residence, travel or military service. The policy is convertible to a permanent plan of insurance at the end of the term period or upon graduation or separation from the Academy. This plan does not prevent a cadet from purchasing insurance from any other company he may select.

## **The Air Force Cadet Wing**

Life in the Air Force Cadet Wing provides an opportunity for personal development of leadership competence and recognition of outstanding performance. The permanent organization of the Wing consists of a headquarters with a commander and his staff, 4 group staffs, and 24 squadrons, each squadron consisting of approximately 110 cadets.

The squadrons and groups are supervised by commissioned officers designated as Air Officers Commanding. They are individually selected to represent to the cadet the highest standards of professional competence, experience, integrity, leadership, and career motivation.

Upperclass cadets are appointed to positions of responsibility within the Cadet Wing to perform command and staff functions and to assist with the military training of the Fourth Class. Cadet officers are selected from the First Class and senior non-commissioned officers from the Second Class. The basis for selection is the cadet's leadership ability, determined in part by the personal appraisal reports submitted twice each year. This report system requires each cadet to rate certain other cadets in his squadron, classmates and members of classes junior to his class.

The senior cadet officer is the Wing Commander with the rank of Cadet Colonel. Other important First Class ranks are Group Commander, Cadet Lieutenant Colonel; Squadron Commander, Cadet

Lieutenant Colonel; and Flight Commander, Cadet Captain. Second Classmen may hold the grades of Master Sergeant, Technical Sergeant and Staff Sergeant. Rank is indicated on the shoulder boards of the cadet uniform.

## **Cadet Uniform**

Distinctive cadet uniforms are issued to cadets during the fall of their Fourth Class year. The basic uniform in the wardrobe is the blue winter dress uniform worn during the academic year. The two parade dress uniforms (blue jacket and blue trousers for winter and blue jacket and white trousers for summer) are worn to parades and ceremonies. The mess dress uniform is worn to social functions.

Cadets of the upper three classes may wear civilian clothes when departing on leave, while on leave and when returning home. Cadets of the First and Second Classes may wear civilian clothes off base while off duty, or at the home of a commissioned officer when specified by the host. Cadets do not have occasion to wear civilian clothes during their Fourth Class year.

## **The Honor Code**

The Honor Code is one of the most important features of cadet life. The Code was adopted by the Class of 1959 and has since been administered through elected Honor Representatives of the Cadet Wing. The Code embodies these principles: "We will not lie, cheat or steal, nor tolerate among us those who do."

The cadets realize that the Code is a bond between themselves and the entire military heritage. An adherence to the principles of personal integrity has traditionally characterized the professional officer. Every officer must follow this concept of honor if he is to perform his duties and carry out his responsibilities properly.

It is through this sense of trust that professors leave the classrooms while tests are being administered at the Academy. Both in and out of the classroom, a cadet practices the virtues of personal integrity, mutual trust, and loyalty through allegiance to the Honor Code.

## **Cadet Awards and Distinctions**

A program of cadet awards provides recognition to individual graduates who have attained outstanding achievement in academics,

military training, and athletics. A total of 35 individual awards are presented to cadets during each June Week preceding graduation exercises. Private individuals and organizations provide gifts for the outstanding cadets not to exceed a monetary value of \$200. Organizational trophies are presented to the outstanding cadet squadron in drill, to the outstanding cadet squadron in intramural athletics, to the outstanding cadet squadron in overall military performance, and to the cadet honor squadron.

Cadets of the Air Force Academy may enter the Rhodes scholarship competition each year. Those desiring to compete for a scholarship are carefully screened by the Academy on the basis of scholastic ability, character, and extracurricular activities. Since the Academy graduated its first class in 1959, six graduates have won Rhodes scholarships to obtain master's degrees at Oxford University, England. Cadets have recently been invited to compete for other scholarships and fellowships providing advanced education in the United States and abroad. These include the Marshall Scholarships, National Science Foundation Fellowships, Woodrow Wilson National Fellowships, Fulbright and Olmstead Scholarships, and Daniel and Florence Guggenheim Fellowships.

### **The Cadet Wing Mascot**

In the fall of 1955, members of the Class of 1959 selected the falcon as the mascot of the Cadet Wing. The falcon was chosen because its strength, alertness, aggressiveness, and poise in flight are symbolic of the mission of the United States Air Force. The falcon was named "Mach I," the term indicating the speed of sound.

There are several falcons at the Academy housed in the mews north of the academic area. The falcons are trained and cared for by the Cadet Wing Falconers. These cadets volunteer their free time to practice the ancient sport of falconry, which involves training the falcons to fly in pursuit of a lure. The Cadet Falconers conduct demonstrations of the falcons' flying ability at halftime activities at football games and other sports events.

### **Religion**

In preparing cadets for future leadership, the Air Force Academy stresses the development of religious and moral values. A military leader is responsible for upholding those values among the men within his command.



A well-balanced religious program for adherents of the three major faiths — Protestant, Catholic and Jewish — enables cadets to develop their potential for religious leadership and at the same time to worship in the faith of their choice.

Cadets attend Sunday or Sabbath services of their faith at the Cadet Chapel. Cadets of the First, Second and Third Classés may attend churches of their respective denominations in Colorado Springs.

There are other religious activities available to cadets who wish to participate. These include daily worship, special denominational services, choir participation, and religious instruction classes. In addition, a number of cadets have volunteered to teach Sunday School classes for children of Academy personnel.

Religious services are conducted by the Protestant, Catholic, and Jewish Chaplains. Besides their organized religious activities, the Chaplains are available to the cadets at any time for personal conferences or counseling. Many of the cadets make personal adjustments and solve problems through private discussions with their Chaplain.

The center of religious activities for the Cadet Wing is the Cadet Chapel. The Chapel has been designed to provide an enclosure for all three faiths and to impart a distinct character to each church located within the structure. The modern Chapel features 17 aluminum spires, designed as a monument to tomorrow's Air Force leaders.

## Recreation

Recreational activities provide the cadets with diversion from their intensive schedule of classes and study. Arnold Hall is the cadet social center where most of the weekend activities are held. The social center is divided into three main areas: a 3,000-seat theater, the reception room and ballroom, and recreational rooms.

Movies are held in the theater on Friday and Saturday nights and Sunday afternoons for all cadets who desire to attend. The theater is also used for concerts, plays, guest appearances, and other special events.

The reception room and ballroom is one large area where the cadets entertain guests, hold formal and informal dances and other social functions. This spacious area is enclosed with picture windows, providing a view of the northern portion of the Academy site and

the landmark "Cathedral Rock." Located on the outside patio is a white marble statue of the mythological winged horse "Pegasus," given to the Air Force Academy by the Italian Government.

The recreation area has a game room, card room, television room, an eight-lane bowling alley, and snack bar which may be used by cadets and their guests.

Social functions are held in Arnold Hall on Friday and Saturday nights and evenings preceding holidays. The Cadet Wing Hostess supervises all of the social functions. On weekends cadets and guests may utilize the Academy recreation area, called Farish Memorial. Here in a mountainous setting, they enjoy fishing, horseback riding, boating, barbecues, picnics, and winter sports.

The Cadet Wing Hostess supervises the teaching of proper social customs and courtesies to Fourth Class cadets. This includes dining etiquette, social calls, introductions, grooming and conduct in public, and other social graces. Also, ten hours of professional dancing instructions are given to each Fourth Class cadet.

## **Cadet Activities**

Extracurricular activities are available to the cadets to further their hobbies or specific interests. It has been found that participation in these activities helps to develop leadership abilities. The cadets may form their own activities, provided there is sufficient interest, and may join the organizations of their choice. Major cadet activities are as follows:

### ***Representative Activities***

*Class Ring Committee* — Representatives of the Second Class select the ring crest and assist the class in selection and purchase of the class ring. The ring is awarded during June Week of the Second Class year.

*Wing Dance Committee* — Representatives from each squadron plan dances for their class and the Cadet Wing.

*Class Councils* — Representatives study special problems as directed by the Commandant of Cadets or the Cadet Wing Commander and prepare supporting studies and reports.

*Catholic and Protestant Religious Councils* — Representatives from each class assist in planning religious activities and represent the Academy at intercollegiate religious conferences.

*Rally Committee* — Representatives from each squadron plan pep rallies and halftime events at football games and other competitive sports. This activity is responsible for the care and presentation of the Cadet Wing Mascot.

### ***Academic and Professional Activities***

*Cadet Forensic Association* — Provides cadets with an opportunity to participate in forensic activities including debating, extemporaneous speech, oratory, discussion, and interpretive reading. Members of the Association represent the Academy in inter-collegiate speech competition.

*Cadet Forum* — Provides a forum for cadet and guest speaker discussion of public military affairs and for participation in inter-collegiate student conferences.

*Cadet Engineering Society* — Provides the means to engage in extracurricular engineering projects, especially aeronautical science and rocket development.

*Cadet Chorale* — Provides for participation in group singing. The Chorale appears before the Cadet Wing and the public in approved instances.

*Professional Studies Group* — Provides an opportunity to learn more about airpower and airmanship subjects. The Studies Group hears lectures by military officials, conducts a books and periodicals review panel, supervises the use of squadron airpower rooms, and arranges a limited number of field trips to military installations.

*Blue Bards (Dramatics Society)* — Provides an opportunity for cadets to develop their talents in theatrical production. Two major dramatics productions are presented annually.

### ***Publication Activities***

*Contrails Staff* — Responsible for publication of the "Contrails" handbook prior to June of each year. The handbook serves as a record for the traditions and customs of the Cadet Wing as well as an orientation guide to the military service for each new class.

*Polaris Staff* — Responsible for publication of the yearbook "Polaris" prior to graduation each year. The yearbook presents a pictorial history of the activities of the Cadet Wing and the Air Force Academy during the year.

*Talon Staff* — Responsible for publication of the monthly cadet magazine "The Talon."

*Dodo Staff* — Responsible for writing an informal cadet paper called "The Dodo."

### ***Recreational Activities***

*The following divisions of Cadet Activities provide facilities and activities for the cadets in various hobbies:*

*Aquatic* — Cadets participate in such water activities as sailing, scuba, and water skiing.

*Audio* — Cadets further their education in electronics and construct high fidelity and stereo sound systems. This activity provides for the Cadet Broadcasting Station.

*Aviation* — This activity provides interested cadets with an opportunity to obtain FAA ratings. Members accomplish their own maintenance and rebuilding of aircraft.

*Bowling* — Cadets bowl for their own enjoyment and also provide a team for local bowling competition.

*Bowman* — Cadets engage in the sport of archery and furnish a team for competition.

*Bridge* — Cadets receive instruction and practice in bridge and participate in tournaments.

*Chess* — Instruction and practice is provided in chess and matches are arranged with outside teams.

*Fishing* — Cadets go on fishing trips in the local area.

*Foreign Language* — Provides an opportunity for cadets to develop their ability to speak foreign languages and enhance their education in foreign customs.

*Geography* — Geography is studied in the local area through instructional and recreational field trips.

*Gun* — Cadets engage in the sports of hunting and skeet shooting. This activity sponsors a skeet team and a hi-powered rifle team.

*Handball* — Provides for practice in handball and participation in competitive games.

*Judo* — Instruction in the art of self defense is provided and a team is trained for competition.



*Lacrosse* — Cadets play and receive instruction in the sport of lacrosse.

*Mathematics* — Cadets further their knowledge of mathematics.

*Model Engineering* — Provides facilities and opportunities for the design, construction, and operation of model railroads, aircraft, and ships.

*Mountaineering* — Cadets participate in mountaineering activities.



*Musical* — Cadets further their musical talents and provide music for certain cadet functions.

*Photography* — Cadets receive instruction in photography, have opportunities to take photos, and render photographic assistance to other activities of the Cadet Wing.

*Radio* — Furthers amateur radio interest and provides an understanding of military communications.

*Saddle* — Provides facilities and opportunities for horseback riding. A team of cadets represents the Academy in the National Intercollegiate Rodeo Association.

*Skating* — Provides instruction in figure skating and speed skating, affords opportunities for skating parties at the Academy and in

the local area, and trips to local skating attractions of national interest.

*Skiing* — Provides for instruction and practice in skiing and trips to ski areas in the Rocky Mountain region.

*Squash* — Instruction in squash and participation in competitive games.

*Stamp* — Cadets engage in philately activities.

*Volleyball* — Cadets receive instruction in volleyball and participate in college-level competition.

*Water Polo* — Cadets play water polo and represent the Academy in competition with other teams.

*Weight Lifting* — Cadets participate in the sport of weight lifting and compete with similar teams.

### ***June Week Activities***

During the week prior to graduation of a cadet class, the Academy holds June Week activities. Among the events are award ceremonies honoring outstanding graduates and cadet squadrons, Cadet Wing parades, and aircraft flyovers. A dinner and graduation ball are held for members of the graduating class and their guests. Parents and friends of the graduating cadets are encouraged to visit at that time and to witness or take part in the many activities. Several activities are also held for the undergraduates, including a recognition ceremony for members of the Fourth Class who officially become upperclassmen at this time.

### ***Academic Activities***

Through the academic and professional cadet organizations, the Air Force Academy sponsors various educational meetings. In the spring of each year an Air Force Academy Assembly is held with delegates from colleges and universities all over the country gathering to discuss vital issues affecting the nation and the world. Each December the Academy hosts a debate tournament which provides an opportunity for top debaters from across the nation to compete on the national debate topic. Senior military officers and distinguished scholars are invited to come to the Academy as special guest lecturers by various cadet organizations and faculty groups throughout the year. The Academy is the site of annual meetings of many scientific and scholarly organizations.

# Career Information



## Officer Rank

A cadet who has maintained the required grades will be graduated from the Academy with a commission as a second lieutenant in the Regular component of the United States Air Force. A limited number of graduates in each class may request assignment to other branches of the armed services.

## Flying Training

An Academy graduate who is physically qualified may volunteer for pilot or navigator training. After graduation leave he will be sent to an Air Training Command base and will spend about a year earning the rating of pilot or navigator.

## Career Assignments

An Academy graduate who completes pilot training will likely receive his first assignment in an operational unit as an air crew member in fighter, bomber or troop carrier aircraft. A graduate who does not qualify for any type of flying duty may be sent to a professional technical school. For example, he may specialize in guided

missiles and receive an assignment in missile operation or research and development.

Further education at an armed forces graduate school or at a civilian college or university may be one of the early assignments of an Academy graduate. He may concentrate his graduate work in the sciences, social sciences or humanities and later receive an assignment based on his specialty.

As the Academy graduate progresses in his career, he will rotate between educational assignments, operational duties, and staff positions—both in the United States and overseas. With advances in rank his responsibilities will increase proportionately, and opportunities will be ever-present for him to evolve to greater command responsibility.

### **Career Benefits**

The Academy graduate will obtain substantial periodic pay increases and accrue promotions on the basis of efficiency and seniority through successive ranks. Besides his base pay he will receive flight pay (if on flying duty), tax free subsistence and quarters allowances, medical care for himself and dependents, payment of transportation costs, dislocation adjustments, and retirement pay. Some of the additional benefits which will be available to him are base exchange and commissary privileges, in-service housing loans, and educational opportunities. Monthly compensation is granted to dependents of deceased Air Force personnel who die in the line of duty while in the service.

### **Advanced Education**

The Air Force encourages its officers to apply for study in civilian colleges or universities. An officer is accepted for an educational assignment, based on his qualifications and the needs of the Air Force in his chosen field of study. It is anticipated that a substantial number of Academy graduates will have the opportunity to obtain advanced degrees. The Academy's four-year curriculum will qualify a graduate to study for a master's degree either in physical sciences, social sciences or humanities. All Academy graduates may expect to be assigned during their careers to one or more of the armed forces schools for advanced professional studies.



# Personnel Directory

## SUPERINTENDENT AND STAFF

**Maj. Gen. Robert H. Warren**  
*Superintendent*  
 B.S., United States Military Academy

**Brig. Gen. Robert F. McDermott**  
*Dean of the Faculty; Permanent Professor*  
 B.S., United States Military Academy  
 M.B.A., Harvard University  
 LL.D., St. Louis University

**Brig. Gen. Robert W. Strong, Jr.**  
*Commandant of Cadets*  
 B.S., United States Military Academy

**Col. M. L. Martin**  
*Director of Athletics*  
 B.S., United States Military Academy

**Col. Howard J. Withycombe**  
*Chief of Staff*  
 A.B., San Jose State College  
 M.S., Florida State University

**Col. Christopher H. Munch**  
*Staff Judge Advocate*  
 B.S., United States Military Academy  
 J.D., University of Illinois

**Col. Harry C. Green**  
*Surgeon*  
 M.D., University of Louisville

**Col. Richard P. Haney**  
*Director of Information*  
 University of Texas

**Col. Stephen J. O'Connor**  
*Staff Chaplain*  
 B.A., Mt. St. Alphonsus Seminary

**Col. Virgil J. O'Connor**  
*Cadet Registrar*  
 B.A., State College of Iowa  
 M.A., University of Michigan  
 Ed.D., Harvard University

**Col. Edward J. Stealy**  
*Deputy Base Commander*  
 B.S., University of Maryland

**Col. James M. Whitmire, Jr.**  
*Deputy Chief of Staff/Personnel*  
 B.S., The Citadel

**Col. Hugo Zimmerman**  
*Deputy Chief of Staff/Comptroller*  
 University of Maryland

**Lt. Col. Jerome C. Eichholz**  
*Deputy Chief of Staff/Materiel*  
 The Citadel

**Lt. Col. Ray S. Warden**  
*Deputy Chief of Staff/Engineering*  
 A.B., Syracuse University

**Maj. Gordon P. Culver**  
*Special Assistant to the Superintendent*  
 Dickinson State College, N. D.

**Maj. James T. Hargrove**  
*Director of Administrative Services*  
 University of Maryland

**Col. Ralph J. Hallenbeck**  
*Director of Inspection*  
 B.S., United States Military Academy

**Capt. John F. Murphy, Jr.**  
*Director of Security and Law*  
 B.S., Fordham University

## FACULTY

### *The Academic Program*

**Maj. Robert L. Able**  
*Assistant Professor of Economics*  
 B.S., University of Louisville  
 M.B.A., Ph.D., University of Kentucky

**Maj. Ross C. Alm**  
*Counselor and Administrator for Humanities;*  
*Associate Professor of English*  
 B.A., University of North Dakota  
 M.A., Michigan State University  
 Ph.D., University of Denver

**Capt. Arnold A. Anderson**  
*Instructor in German*  
 B.A., St. John's University, New York  
 M.A., Colorado College

**Capt. Paul W. Anderson**  
*Instructor in English*  
 B.A., University of Notre Dame  
 M.S., University of Wisconsin

**Capt. William L. Anderson**  
*Assistant Professor of English*  
 B.S., United States Military Academy  
 M.A., University of Oklahoma

**Capt. Richard T. Andrews**  
*Assistant Professor of Behavioral Sciences*  
 B.A., Willamette University  
 M.S., Trinity University

**Capt. Edward Anlian**  
*Assistant Professor of Mathematics*  
 B.S., Albright College  
 M.S., University of Iowa

**Capt. John E. Arnet**  
*Instructor in Chemistry*  
 B.S., United States Military Academy  
 M.A., University of Texas

**Maj. Hendrick J. Arnold**  
*Assistant Professor of Mathematics*  
 B.S.E.E., M.A., University of Arkansas  
 M.S.E.E., Louisiana State University

**Col. John W. Ault**  
*Professor and Head of Department of Mathematics*  
 B.S., Bowling Green University  
 M.A., The Ohio State University

**Lt. Col. Cortland P. Auser**  
*Professor and Acting Head of Department of English*  
 A.B., Brooklyn College  
 A.M., Columbia University  
 Ph.D., New York University

**Capt. William K. Ayers**  
*Instructor in English*  
 B.A., State University of Iowa  
 Graduate Study, Indiana University

**Maj. Theodore Bacha**  
*Instructor in Mechanics*  
 B.S., Pennsylvania State University  
 M.S., Purdue University

**Maj. Paul Baker, Jr.**  
*Associate Professor of Physics*  
 B.A., Washington and Lee University  
 B.S., United States Military Academy  
 M.S., North Carolina State College

**Capt. John L. Baldner**  
*Assistant Professor of Aeronautics*  
 B.S., United States Military Academy  
 M.S., Air Force Institute of Technology

**Capt. Arnold P. Ballantyne**  
*Assistant Professor of Economics*  
 B.A., University of Southern California  
 M.A., State University of Iowa

**Capt. James E. Banks**  
*Assistant Professor of Chemistry;*  
*Chief, Basic Science Section, Auto-*  
*Instruction Division, Instructional Research*  
 B.S., M.S., Ph.D., Stanford University  
 Advanced Study, Technische Hogeschool,  
 Delft, Netherlands

**Lt. Col. Clarence E. Barnes, Jr.**  
*Associate Professor of Law*  
 A.B., LL.B., University of Kentucky

**Capt. Daniel S. Barnes**  
*Assistant Professor of Astronautics*  
 B.S., United States Military Academy  
 S.M., Massachusetts Institute of  
 Technology

**Capt. Charles Barnett**  
*Associate Professor of French*  
 B.A., University of Florida  
 M.A., Louisiana State University

**Maj. James W. Barnhill**  
*Instructor in History*  
 B.A., Presbyterian College  
 M.A., Northwestern University

**Capt. David R. Barr**  
*Assistant Professor of Mathematics*  
 B.A., M.A., M.S., Miami University, Ohio

**Capt. Fred D. Bartleson, Jr.**  
*Assistant Professor of Physiology*  
 B.S., M.S., University of Florida

**Maj. Ray S. Basham**  
*Associate Professor of Electrical Engineering*  
 B.S., United States Military Academy  
 M.S., Ph.D., University of Illinois

**Lt. Col. Roger R. Bate**  
*Permanent Professor; Director of Scientific Research; Professor of Astronautics*  
 B.S., United States Military Academy  
 B.A., B.Sc., M.A., Oxford University

**Capt. Henry L. Baulch**  
*Assistant Professor of History*  
 B.S., United States Naval Academy  
 M.A., University of Colorado

**Capt. Wendall C. Bauman**  
*Instructor in Mathematics*  
 B.S.M.E., University of Nebraska  
 M.M.E., University of Oklahoma

**Capt. Ovid L. Bayless**  
*Instructor in English*  
 B.A., M.A., Baylor University

**Maj. Jaime Berdecio (Bolivian Air Force)**  
*Instructor in Spanish*  
 Diplomat, Bolivian Armed Forces War  
 College and Argentine Armed Forces  
 Staff College

**Capt. Theodore F. Beresford**  
*Instructor in Electrical Engineering*  
 B.S., M.S., University of Colorado

**Capt. George B. Berke**  
*Instructor in English*  
 B.A., Rutgers University  
 M.A., University of Wisconsin

- Capt. Joseph A. Berthelot**  
*Assistant Professor of English*  
 B.A., University of Western Ontario  
 M.A., Texas Western College  
 Ph.D., University of Denver
- Maj. Joseph W. Best**  
*Assistant Professor of Mathematics*  
 B.S., Youngstown College  
 M.S., Oklahoma State University
- Lt. Col. Harold J. Bestervelt**  
*Professor and Acting Head of Department of Electrical Engineering*  
 B.S., United States Military Academy  
 M.S., University of Illinois
- Capt. Charles E. Bishop**  
*Instructor in Aeronautics*  
 B.S., United States Military Academy  
 M.S.M.E., University of Colorado
- Capt. Charles A. Bodeen**  
*Instructor in Astronautics*  
 B.S.M.E., M.S.M.E., M.E., California Institute of Technology
- Capt. Ray L. Bowers**  
*Assistant Professor of History*  
 B.S., United States Naval Academy  
 M.A., University of Wisconsin
- Maj. Richard C. Bowman**  
*Associate Professor of Political Science*  
 B.S., United States Military Academy  
 M.S., Oklahoma State University  
 M.P.A., Harvard University
- Capt. G. Dana Brabson**  
*Instructor in Chemistry*  
 B.S., Case Institute of Technology  
 M.S., University of California
- Maj. Paul L. Briand, Jr.**  
*Associate Professor of English*  
*Research Associate*  
 B.A., University of New Hampshire  
 M.A., Columbia University  
 Ph.D., University of Denver
- Maj. Fred A. Brockway**  
*Associate Professor of English and Philosophy*  
 B.A., M.A., University of Texas
- Capt. Ogden Brown, Jr.**  
*Assistant Professor of Behavioral Sciences*  
 B.A., M.A., American University
- Lt. Col. Robert H. Brundin**  
*Associate Professor of Chemistry*  
 B.S., United States Military Academy  
 M.S., The Ohio State University
- Maj. Carl L. Brunson**  
*Instructor in Mechanics*  
 B.S., United States Military Academy  
 M.S.A.E., University of Michigan

- Capt. Thomas B. Bruton**  
*Instructor in Law*  
 B.S., LL.B., University of Colorado
- Maj. James E. Bubb**  
*Assistant Professor of Aeronautics*  
*Research Associate*  
 B.S., Bucknell University  
 M.S.M.E., Purdue University
- Capt. Robert M. Burch**  
*Instructor in History*  
 B.S., United States Naval Academy  
 M.A., Columbia University
- Capt. William D. Burroughs**  
*Assistant Professor of English*  
 B.S., United States Military Academy  
 M.A., University of North Carolina
- Maj. Franklin C. Butler, Jr.**  
*Associate Professor of Psychology;*  
*Director of Instructional Research*  
 B.A., Bowdoin College  
 M.A., Clark University
- Capt. James D. Butt**  
*Assistant Professor of Mechanics*  
 B.S.E., University of Michigan  
 M.S.N.E., Air Force Institute of Technology
- Lt. Col. John D. Calhoun**  
*Associate Professor of Aeronautics*  
 B.S., United States Military Academy  
 M.S.E., Princeton University
- Capt. Charles R. Carney**  
*Instructor in German*  
 B.A., M.A., Vanderbilt University
- Maj. Hiram C. Caroom**  
*Assistant to the Dean for Counseling and Administration; Counselor and Administrator of Applied Sciences;*  
*Associate Professor of Economics*  
 B.A., University of Redlands  
 M.B.A., University of Southern California  
 D.B.A., Harvard University
- Capt. Donald G. Carpenter**  
*Instructor in Physics*  
 B.S., University of Maryland  
 M.S., Air Force Institute of Technology  
 Ph.D., Iowa State University
- Maj. John C. Casey**  
*Instructor in Astronautics*  
 B.S., Purdue University  
 M.S.A.E., A.E., California Institute of Technology
- Maj. Joseph R. Castelli (U. S. Army)**  
*Instructor in Geography*  
 B.S., United States Military Academy  
 M.A., University of Oklahoma

**Maj. Manuel C. Castro**  
*Assistant Professor of Spanish*  
 B.A., Furman University

**Maj. John E. Chrisinger**  
*Assistant Professor of Aeronautics*  
 B.S., Iowa State University  
 M.S.A.E., A.E., Massachusetts Institute  
 of Technology

**Capt. Edward L. Claiborn**  
*Assistant Professor of Economics*  
 B.S., University of Idaho  
 M.A., Princeton University

**Maj. Roy T. Clark, Jr.**  
*Assistant Professor of Chemistry*  
 B.S., M.A., Southwest Texas State College

**Maj. William G. Clark**  
*Associate Professor of English*  
 B.A., M.A., State University of Iowa  
 Ph.D., University of Denver

**Capt. Maurice V. Clegg**  
*Instructor in Mathematics*  
 B.S., University of Idaho  
 M.S., University of Utah

**Capt. Charles R. Coble, Jr.**  
*Instructor in Political Science*  
 B.S., United States Naval Academy  
 M.A., University of North Carolina

**Capt. Donald A. Cohen**  
*Assistant Professor of Physics*  
 B.S., University of Arizona  
 M.S., Ph.D., Case Institute of Technology

**Capt. Sanford L. Cohn**  
*Instructor in English*  
 B.A., Brooklyn College  
 M.A., Columbia University

**Capt. John D. Colbrunn**  
*Assistant Professor of Economics*  
 B.A., DePauw University  
 M.A., University of Oklahoma

**Capt. Donald K. Cole**  
*Assistant Professor of Aeronautics*  
 B.S., United States Naval Academy  
 M.S.M.E., Southern Methodist University

**1/Lt. James H. Conely**  
*Instructor in English*  
 B.A.E., M.Ed., University of Florida

**Capt. Charles M. Cooke, Jr.**  
*Assistant Professor of History;*  
*Instructor in Chinese*  
 B.S., United States Naval Academy  
 M.A., University of Washington

**1/Lt. Frank B. Cooper**  
*Instructor in English*  
 B.A., University of North Dakota  
 B.Litt., University of Glasgow

**Maj. Philip L. Cooper**  
*Instructor in Physiology*  
 B.S., Long Island University  
 M.S., New York University

**Lt. Col. Joseph D. Cortez**  
*Associate Professor of Spanish*  
 B.S., University of Arizona  
 M.A., University of Denver

**Capt. William M. Crabbe, Jr.**  
*Associate Professor of History*  
 B.A., The Citadel  
 M.P.A., Harvard University  
 Ph.D., George Washington University

**Capt. James A. Crim**  
*Instructor in Aeronautics*  
 B.S.M.E., University of Washington  
 M.S.M.E., University of Colorado

**Lt. Col. Gage H. Crocker**  
*Professor and Head of Department of  
 Aeronautics*  
 B.S., Massachusetts Institute of  
 Technology  
 M.S., California Institute of Technology  
 M.S.A.E., Ph.D., University of Michigan

**Lt. Col. Willis A. Cude, Jr.**  
*Associate Professor of Chemistry*  
 B.S., University of Texas  
 M.S., The Ohio State University

**Capt. Ernest D. Cunningham**  
*Instructor in Law*  
 B.A., Columbia College  
 LL.B., Columbia University Law School

**Capt. Richard J. Daleski**  
*Instructor in Political Science*  
 B.S., United States Military Academy  
 M.P.A., Princeton University

**Lt. Col. Daniel H. Daley**  
*Associate Professor of Aeronautics*  
 B.S.M.E., Purdue University  
 S.M.A.E., Massachusetts Institute of  
 Technology

**Capt. Walton F. Dater, Jr.**  
*Instructor in English*  
 B.A., Yale University  
 Graduate Study, Syracuse University

**Maj. Carl F. Davis**  
*Associate Professor of Electrical Engineering*  
 B.A., University of Maine  
 M.S., Ph.D., University of Illinois



- Capt. Richard E. Denfeld**  
*Assistant Professor of Physics*  
 B.S., United States Naval Academy  
 M.S., University of Utah
- Capt. John C. M. des Isles**  
*Assistant Professor of Behavioral Sciences;  
 Chief, Academic Skills Division,  
 Instructional Research*  
 B.S., United States Military Academy  
 M.S., Purdue University
- Capt. Earl S. Doderer**  
*Instructor in Mechanics*  
 B.S., Union College  
 M.S., Princeton University
- Capt. John A. Donoho**  
*Assistant Professor of Russian*  
 B.S., Memphis State University  
 M.A., Syracuse University
- Capt. Thornton T. Doss**  
*Assistant Professor of Physics*  
 B.A., Austin College  
 M.A., University of Texas
- Capt. Richard P. Dowell**  
*Instructor in Political Science*  
 B.S., United States Military Academy  
 M.A., Stanford University
- Lt. Col. Eldon W. Downs**  
*Associate Professor of History*  
 B.A., M.A., Oklahoma State University  
 Ph.D., University of Wisconsin
- Capt. Walter N. Duffett**  
*Instructor in Geography*  
 A.B., San Diego State College  
 M.A., The Ohio State University
- Capt. Richard L. Eisenman**  
*Research Associate, Directorate of Research;  
 Assistant Professor of Mathematics*  
 A.B., Holy Cross College  
 M.A., University of Connecticut
- Capt. William P. Emley, Jr.**  
*Instructor in Mathematics*  
 B.S., United States Military Academy  
 M.S., Oklahoma State University
- Capt. Richard R. Erbschloe**  
*Assistant Professor of Mathematics*  
 A.B., M.A., University of Missouri
- Capt. Phillip J. Erdle**  
*Assistant Professor of Mechanics*  
 B.S., United States Military Academy  
 M.S., University of Michigan
- Capt. Howard M. Estes, Jr.**  
*Associate Professor of Mechanics*  
 B.S., United States Naval Academy  
 M.S., Ph.D., University of Michigan
- Lt. Col. George V. Fagan**  
*Permanent Professor; Director of the Library;  
 Director of Social Science and Humanities  
 Research*  
 B.S., M.A., Temple University  
 M.A.L.S., University of Denver  
 Ph.D., University of Pennsylvania
- Maj. John W. Fahrney**  
*Assistant Professor of Law*  
 B.A., LL.B., LL.M., George Washington  
 University
- Capt. Michael Fatiuk, Jr.**  
*Assistant Professor of Russian*  
 B.S., Roanoke College  
 M.A., Indiana University
- Capt. Albert A. Fitzpatrick**  
*Assistant Professor of Economics*  
 B.S., M.B.A., University of Southern  
 California  
 M.A., Baylor University  
 Ph.D., University of Southern California
- Lt. Col. William C. Flannigan**  
*Director of Audio-Visual Services;  
 Associate Professor of Political Science*  
 B.S., M.A., University of Maryland
- Capt. Wallace E. Fluhr**  
*Instructor in Mechanics*  
 B.S., University of Kentucky  
 M.S., Ph.D., University of Illinois
- Capt. David I. Folkman, Jr.**  
*Instructor in History*  
 B.S., Brigham Young University  
 M.A., University of Utah
- Capt. Roger P. Fox**  
*Instructor in History*  
 B.A., Western Reserve University  
 M.A., Syracuse University
- Capt. Jack E. Freeman**  
*Assistant Professor of Political Science*  
 B.A., M.A., Baylor University
- Capt. Gustav J. Freyer**  
*Assistant Professor of Physics*  
 B.S., United States Military Academy  
 M.S., Air Force Institute of Technology
- Capt. William L. Frier**  
*Programmed Instruction Division,  
 Instructional Research*  
 B.S., United States Military Academy  
 M.A., University of Texas
- Capt. Thomas N. Frisby**  
*Assistant Professor of Law*  
 LL.B., Louisiana State University

**Capt. Wayne T. Frye***Instructor in Mechanics*B.S., United States Military Academy  
M.S., Massachusetts Institute  
of Technology**Maj. John R. Galt***Associate Professor of English*B.A., M.A., Boston University  
Ph.D., University of Denver**1/Lt. Gerald J. Garvey***Instructor in Political Science*B.S., United States Air Force Academy  
M.A., Ph.D., Princeton University**Maj. Jesse C. Gatlin, Jr.***Associate Professor of English*B.S., United States Military Academy  
M.A., University of North Carolina  
Ph.D., University of Denver**Maj. Dean S. Gausche***Assistant Professor of Political Science*B.S., United States Military Academy  
M.A., Stanford University**Capt. Richard F. Gebhardt***Instructor in Mechanics*B.S.E.E., Union College  
M.S.A.E., A.E., M.S.E. Instr. E., University  
of Michigan**Capt. William Geffen***Associate Professor of German*B.A., University of California  
M.A., Stanford University**Capt. Louis E. Gelas (French Air Force)***Assistant Professor of French*Ecole Supérieure d'Aéronautique, Paris,  
France**Capt. Herman L. Gilster***Instructor in Geography*B.S., United States Military Academy  
M.B.A., University of Denver**Capt. William C. Giltner***Assistant Professor of Engineering Drawing*B.S., University of New Mexico  
M.S., University of Illinois**1/Lt. John G. Girod***Instructor in English*B.A., University of Southwestern Louisiana  
M.A., Louisiana State University**Capt. Carter M. Glass***Instructor in Mathematics*B.S., United States Naval Academy  
M.S., Air Force Institute of Technology**Capt. William F. Goodner***Associate Professor of Physiology*B.A., Colorado College  
M.A., Stanford University**Capt. William J. Goodwin, Jr.***Instructor in Physics*B.S., United States Military Academy  
M.S., University of Wisconsin**Capt. Richard J. Gowen***Instructor in Electrical Engineering*B.S., Rutgers University  
M.S., Ph.D., Iowa State University**Capt. Theodore K. Graves***Instructor in Behavioral Sciences*B.S., United States Naval Academy  
M.S., University of Southern California**Maj. Gordon M. Gray***Associate Professor of Mechanics*B.S., United States Naval Academy  
M.S., Ph.D., University of Illinois**Capt. Harold D. Gray***Instructor in English*B.A., University of South Dakota  
M.A., Stanford University**Capt. Lawrence E. Green***Instructor in Political Science*B.S., Southern Illinois University  
M.S., University of Illinois  
M.A., Baylor University**Capt. Roy D. Green***Instructor in German*

B.A., M.A., Vanderbilt University

**Capt. Santiago Guzman, Jr.***Instructor in Spanish*B.S., United States Naval Academy  
M.A., University of North Carolina**Col. Francis J. Hale***Professor and Head of Department of  
Astronautics*B.S., United States Military Academy  
S.M., Sc.D., Massachusetts Institute  
of Technology**Lt. Col. J. Fred Hamblen***Assistant Professor of Law*B.S., LL.B., University of Tennessee  
LL.M., George Washington University**Capt. John B. Haney***Assistant Professor of English;**Chief, Television Division,  
Instructional Research*B.S., Miami University, Ohio  
M.A., Ph.D., University of Michigan

- Maj. John Hansel, Jr.**  
*Associate Professor of Economics*  
 B.S.B.A., University of Florida  
 M.B.A., North Texas State University
- Capt. Jerry L. Hanson**  
*Instructor in Electrical Engineering*  
 B.A., St. Olaf College  
 B.S., Air Force Institute of Technology  
 M.S., University of Illinois
- Capt. Billy D. Harrison**  
*Assistant Professor of Mathematics*  
 B.A., Oklahoma State University  
 M.S., North Carolina State College
- Capt. Preston S. Harvill, Jr.**  
*Instructor in Mechanics*  
 B.S., United States Military Academy  
 M.S., Stanford University
- Capt. Theodore C. Heine, Jr.**  
*Assistant Professor of German*  
 B.A., Cornell University  
 M.A., Middlebury College
- 2/Lt. Juergen A. Heise**  
*Executive Officer of the Library*  
 B.A., M.A., Syracuse University
- Capt. Daymond E. Helton**  
*Instructor in Mathematics*  
 A.B., M.A., University of Kentucky
- Lt. Col. Jean C. Hempstead**  
*Faculty Executive Officer;*  
*Associate Professor of Mathematics*  
 B.S., Iowa State University  
 M.A., University of Pennsylvania  
 C.E., Iowa State University
- 1/Lt. Carl W. Hennrich**  
*Assistant Professor of Aeronautics*  
 B.A.E., B.E.E., M.A.E., University of Virginia
- Capt. E. Michael Henry**  
*Instructor in Physics*  
 B.S., University of Illinois  
 M.S., University of Chicago
- Col. Archie Higdon**  
*Permanent Professor and Head of Department of Mechanics; Chairman of Applied Sciences Division*  
 B.S., South Dakota State College  
 M.S., Ph.D., Iowa State University
- Maj. Harold L. Hitchens**  
*Faculty Secretary; Associate Professor of History*  
 B.A., M.A., Ph.D., University of Chicago
- Capt. Alrin P. Hjorten**  
*Instructor in Astronautics*  
 B.S.E.E., University of Washington  
 M.S.E.E., M.S., Instr. E., University of Michigan

- Capt. Charles R. Holloman**  
*Assistant Professor of Behavioral Sciences*  
 B.A., Colorado State College  
 M.S., University of Colorado
- Capt. Harold W. Holtzclaw**  
*Instructor in Political Science*  
 B.A., M.A., University of Kentucky
- Capt. Donald B. Hooper**  
*Instructor in Behavioral Sciences*  
 B.S., M.B.A., The Ohio State University
- Capt. Henry G. Hostetter**  
*Instructor in History*  
 B.A., Lebanon Valley College  
 M.A., Pennsylvania State University
- 1/Lt. Crosby A. Houston**  
*Instructor in Geography*  
 B.S., M.Ed., Rutgers University  
 M.S., Trinity University
- Capt. Donald E. Hovey**  
*Assistant Professor of Behavioral Sciences*  
 B.A., University of California at Los Angeles  
 M.A., Ph.D., University of Colorado
- Capt. Jack T. Humphries**  
*Assistant Professor of Mathematics*  
 B.S., University of Kentucky  
 M.S.N.E., Air Force Institute of Technology
- Capt. Alfred F. Hurley**  
*Research Associate, Directorate of Research;*  
*Assistant Professor of History*  
 B.A., St. John's University, New York  
 M.A., Ph.D., Princeton University
- Capt. Evan E. Huston**  
*Assistant Professor of Electrical Engineering*  
 B.S., Colorado State University  
 M.S., University of Illinois
- Lt. Col. John S. Ingham**  
*Associate Professor of Aeronautics*  
 B.S., Worcester Polytechnic Institute  
 M.S.A.E., California Institute of Technology
- 1/Lt. Wilfred D. Iwan**  
*Assistant Professor of Mechanics*  
 B.S., M.S., Ph.D., California Institute of Technology
- Lt. Col. Ralph F. Jackson, Jr.**  
*Associate Professor of Geography*  
 B.A., M.A., University of Pittsburgh
- Capt. Thomas L. Jackson**  
*Instructor in Mathematics*  
 B.S., United States Naval Academy  
 M.S., North Carolina State College  
 M.A., University of Colorado

**Capt. Delbert H. Jacobs***Instructor in Astronautics*B.S., United States Military Academy  
M.S.A.E., A.E., California Institute of  
Technology**1/Lt. Donnelly J. Johnson***Instructor in Mathematics*

B.S.E.E., M.S., University of New Mexico

**Capt. Douglas S. Johnson***Instructor in Mechanics*B.S., United States Military Academy  
M.S.A.E., A.E., California Institute of  
Technology**Capt. Elliott L. Johnson***Instructor in History*B.A., South Dakota University  
M.A., University of Wisconsin**1/Lt. John D. Johnston***Instructor in Mathematics*

B.S., M.L., University of Pittsburgh

**Capt. Douglas N. Jones***Associate Professor of Economics*B.A., University of New Hampshire  
M.A., Ph.D., The Ohio State University**Maj. John J. Jones***Assistant Professor of History*A.B., Nebraska Wesleyan University  
M.A., University of Missouri**Capt. Oakah L. Jones, Jr.***Instructor in History*B.S., United States Naval Academy  
M.A., University of Oklahoma**Capt. Horst M. Judel****(West German Air Force)***Assistant Professor of German*

Ph.D., University of Giessen, Germany

**Capt. Thomas A. Julian***Assistant Professor of History*B.S., United States Naval Academy  
M.A., Syracuse University**Maj. Alfred E. Junod***Associate Professor of French*B.C.S., A.M., New York University  
Ed.D., University of Buffalo**Capt. Lyle D. Kaapke***Assistant Professor of Behavioral Sciences*B.S., University of Dubuque  
M.A., Baylor University**1/Lt. John F. Kain***Instructor in Economics*B.A., Bowling Green State University  
M.A., Ph.D., University of California**Capt. Raymond A. Karam***Instructor in Political Science*B.S., United States Military Academy  
M.P.A., Harvard University**Capt. Raymond H. Kelley***Instructor in Physics*B.S., Montana State College  
M.S., The Ohio State University**Capt. Carlin J. Kielcheski***Instructor in English*

B.S., M.Ed., Wisconsin State College

**Capt. Wade R. Kilbride***Assistant Professor of Economics*B.S., Regis College  
M.A., University of Texas**Capt. Frederick T. Kiley***Instructor in English*B.A., University of Massachusetts  
M.A., Trinity University**Lt. Col. Marcos E. Kinevan***Associate Professor of Law*B.S., United States Military Academy  
LL.B., University of California**Capt. Thomas E. Kirchgessner***Instructor in Mechanics*B.S., United States Military Academy  
M.S., Rensselaer Polytechnic Institute**Maj. William A. Kirkman***Assistant Professor of Mathematics*B.A., Willamette University  
M.S., University of Colorado**Maj. Frederick J. Knauss***Associate Professor of Electrical Engineering*B.S., United States Military Academy  
M.S., Ph.D., University of Illinois**Capt. Robert W. Koernig***Assistant Professor of Political Science;  
on liaison duty with the Special  
Assistant's Office*B.S., University of Maryland  
B.A., M.A., George Washington University**Capt. Raymond F. Koestner***Instructor in Aeronautics*B.S., United States Military Academy  
M.S., University of Oklahoma**Maj. Charles Konigsberg***Assistant Professor of Political Science*B.A., Harvard University  
M.A., M.P.A., Princeton University**Maj. Richard G. Korthals***Instructor in Astronautics*B.S., M.S. Astro. E., Air Force Institute  
of Technology



**Capt. Richard F. Kott**

*Assistant Professor of Geography*  
A.B., Indiana University  
M.A., University of Oklahoma

**Maj. Otto Kratochvil**

*Instructor in Law*  
LL.B., Louisiana State University  
LL.M., George Washington University

**Capt. Kenneth H. Kronlund**

*Instructor in Physics*  
B.S., United States Military Academy  
M.S., University of Illinois

**Capt. Robert W. Lamb**

*Associate Professor of Chemistry*  
B.S., Arizona State University  
M.A., New Mexico Highlands University  
Ph.D., University of Colorado

**Maj. Edgar B. Landers**

*Assistant Professor of Mathematics*  
B.S., Milligan College  
M.A., George Peabody College for Teachers

**Capt. Larry J. Larsen**

*Assistant Professor of Political Science*  
B.S., United States Military Academy  
M.P.A., Harvard University

**Maj. Phillip N. Larsen**

*Assistant Professor of Electrical Engineering*  
B.S., Colorado State University  
M.S., Ph.D., University of Illinois

**Maj. Richard C. Lathrop**

*Associate Professor of Electrical Engineering*  
B.S., M.S., Ph.D., University of Wisconsin

**Capt. Gail L. Legate**

*Instructor in Physics*  
B.A., Baylor University  
M.A., University of Texas

**Maj. Louis G. Leiser**

*Instructor in Astronautics*  
B.S., United States Military Academy  
M.S., Astronautics, Air Force Institute of Technology

**Maj. Harvey K. Leland**

*Assistant Professor of Mathematics*  
B.S., University of Southern California  
M.S., Stanford University

**Capt. Richard E. Lindstrom**

*Instructor in Chemistry*  
B.S., University of Connecticut  
M.S., Syracuse University

**Capt. Theodore R. Loeschner, Jr.**

*Assistant Professor of Aeronautics*  
B.S., United States Military Academy  
M.S.M.E., Stanford University

**Col. Gustav E. Lundquist**

*Professor and Head of Physics*  
B.S., University of Illinois  
M.S., North Carolina State College

**Maj. John B. Macwherter**

*Associate Professor of Mathematics*  
B.S., United States Military Academy  
M.A., Columbia University

**Maj. William R. Manlove**

*Assistant Professor of Astronautics*  
B.S., United States Military Academy  
M.S.E.E., University of Illinois

**Capt. William J. Maroldo**

*Assistant Professor of English*  
A.B., Hofstra College  
M.A., University of Colorado  
M.P.A., New York University

**Col. Bernard W. Marschner**

*Assistant Dean of the Faculty for Research;  
Professor of Aeronautics*  
B.S., University of Minnesota  
M.S., A.E., Ph.D., California Institute of Technology

**Maj. William D. Marsland, Jr.**

*Assistant Professor of Mathematics*  
B.A., M.A., New York State College for Teachers

**Maj. Mayo L. Mashburn**

*Assistant Professor of Law*  
B.B.A., University of Chattanooga  
LL.B., Emory University

**Capt. Wendell H. Massengale**

*Instructor in Chemistry*  
B.S., Western Kentucky State College  
M.S., University of Utah

**Capt. Richard W. Masson**

*Instructor in Political Science*  
B.S., United States Military Academy  
M.A., Baylor University

**1/Lt. Richard T. Mathews**

*Aide de Camp, Dean of the Faculty*  
B.S., United States Air Force Academy

**Maj. John R. B. Matthis**

*Instructor in Law*  
B.S., LL.B., Wake Forest College

**Capt. James D. McCarthy**

*Instructor in English and Philosophy*  
A.B., University of Notre Dame  
M.A., The Ohio State University

**Capt. Lawrence J. McCarthy**

*Instructor in English*  
B.A., M.A., Florida State University

- Capt. Herbert C. McClammy**  
*Instructor in Mechanics*  
B.M.E., University of Florida  
M.S., Air Force Institute of Technology  
M.S.E., University of Michigan
- Capt. Thomas A. McCreery**  
*Assistant Professor of Mechanics*  
B.S., United States Naval Academy  
M.S., Air Force Institute of Technology  
Ph.D., University of Illinois
- Brig. Gen. Robert F. McDermott**  
*Dean of the Faculty*  
B.S., United States Military Academy  
M.B.A., Harvard University  
LL.D., St. Louis University
- Col. William G. McDonald**  
*Professor and Acting Head of Department of Political Science*  
B.A., University of Tulsa  
Doctoral Studies, Georgetown University,  
Columbia University
- Capt. John P. McDonough**  
*Instructor in Behavioral Sciences*  
B.S., Seton Hall University  
M.S., Purdue University
- Maj. James W. McFarland**  
*Assistant Professor of Physiology*  
B.A., Asbury College  
M.S., University of Kentucky
- Capt. Robert D. McKelvey**  
*Assistant Professor of Astronautics*  
B.S., United States Military Academy  
M.S., Air Force Institute of Technology
- Capt. John F. McMahon, Jr.**  
*Instructor in Political Science*  
B.A., Tufts University  
M.A., University of North Carolina
- Capt. Charles E. McManis**  
*Instructor in French*  
B.A., Ohio Wesleyan University  
M.S., Georgetown University
- Capt. Michael J. Mendelsohn**  
*Assistant Professor of English*  
B.A., University of Pittsburgh  
M.A., Trinity University  
Ph.D., University of Colorado
- Col. Alfonse R. Miele**  
*Permanent Professor and Head of Department of Foreign Languages*  
A.B., Fordham University  
M.A., Ph.D., Columbia University
- Capt. Robert G. Millard**  
*Instructor in Astronautics*  
B.S., United States Military Academy  
M.S.A.E., A.E., Massachusetts Institute of Technology
- Capt. Edward A. Miller, Jr.**  
*Assistant Professor of History*  
B.A., Virginia Military Institute  
M.A., University of Denver
- Capt. James I. Miller, Jr.**  
*Assistant Professor of English*  
B.A., M.A., University of Oklahoma  
B.A., M.A., Oxford University, England
- Capt. Edward K. Mills, Jr.**  
*Assistant Professor of Behavioral Sciences*  
B.S., M.S., University of Utah
- Capt. James B. Misenheimer, Jr.**  
*Assistant Professor of English*  
B.A., Baylor University  
M.A., Southern Illinois University
- Capt. Lawrence B. Molnar**  
*Instructor in Astronautics*  
B.S., United States Naval Academy  
M.S., Massachusetts Institute of Technology
- Col. Peter R. Moody**  
*Permanent Professor and Head of Department of English (on leave of absence at Cambridge University, England)*  
A.B., Wofford College  
B.S., United States Military Academy  
M.A., Duke University
- Capt. Thomas D. Moore, Jr.**  
*Instructor in Electrical Engineering*  
B.S., United States Naval Academy  
M.S., Stanford University
- Maj. Rex K. Moorhead**  
*Associate Professor of Mathematics*  
B.S., M.A., Bowling Green State University
- Capt. Richard A. Moran**  
*Instructor in Electrical Engineering*  
B.S., United States Naval Academy  
M.S., Stanford University
- Capt. Robert Moravec**  
*Instructor in Astronautics*  
B.S., United States Naval Academy  
M.S.E., Purdue University
- 1/Lt. Harry L. Morrison**  
*Instructor in Physics*  
A.B., Ph.D., Catholic University of America
- Col. Christopher H. Munch**  
*Permanent Professor and Head of Department of Law; Staff Judge Advocate*  
B.S., United States Military Academy  
J.D., University of Illinois
- Maj. Louis P. Murray**  
*Assistant Professor of History*  
B.S., United States Military Academy  
M.S., University of Utah

**1/Lt. George Myro**  
*Assistant Professor of English and Philosophy*  
 B.A., Dartmouth College  
 M.A., Harvard University

**Maj. William R. Nelson**  
*Associate Professor of Political Science*  
 LL.B., University of Utah  
 LL.M., New York University  
 M.A., Miami University

**Capt. Albert H. Neubauer**  
*Instructor in Mechanics*  
 B.S., M.S., Purdue University

**Capt. Tyree H. Newton**  
*Assistant Professor of Physiology*  
 B.A., M.S., Baylor University

**Maj. Charles A. Neyhart**  
*Assistant Professor of Aeronautics*  
 B.S., Pennsylvania State University  
 M.S.A.E. (Equivalent), Air Force Institute  
 of Technology

**Capt. George S. Nixon**  
*Instructor in Spanish*  
 B.A., Brigham Young University  
 M.A., Middlebury College

**Maj. Wayne A. Norby**  
*Instructor in Mathematics*  
 B.S., United States Military Academy  
 M.S., University of Illinois

**1/Lt. Wendell S. Norman**  
*Assistant Professor of Aeronautics*  
 B.S., University of Kentucky  
 M.S.A.E., Ph.D., Purdue University

**Capt. Nile B. Norton**  
*Instructor in History*  
 B.A., State College of Iowa  
 M.A., University of Iowa

**Maj. Ray W. Oesch**  
*Assistant Professor of Mathematics*  
 B.Ed., Illinois State Normal University  
 M.A., University of Illinois

**1/Lt. Mancur L. Olson**  
*Instructor in Economics*  
 B.S., North Dakota State University  
 B.A., M.A., Oxford University, England

**Capt. Albert G. Opp**  
*Instructor in Physics*  
 B.S., University of North Dakota  
 M.S. (R.), St. Louis University  
 Dr. Sc., Göttingen University, Germany

**Capt. Albert F. Oppel**  
*Instructor in Mechanics*  
 B.S., United States Military Academy  
 M.S.M.E., Texas Technological College

**Capt. William A. Orth**  
*Assistant Professor of Mechanics*  
 B.S., United States Military Academy  
 M.S., Purdue University

**Capt. Jaime Ortiz-Lopez**  
*Assistant Professor of Spanish*  
 B.S., United States Military Academy  
 M.A., University of Colorado

**Lt. Col. George W. Orton**  
*Associate Professor of Mechanics*  
 B.S., University of Kentucky  
 M.S., Carnegie Institute of Technology  
 Ph.D., The Ohio State University

**Maj. Timothy Osato**  
*Assistant Professor of Political Science*  
 B.A., Yale University  
 M.A., Columbia University  
 M.P.A., Harvard University

**Capt. Gerald H. Parshall**  
*Assistant Professor of Electrical Engineering*  
 B.S., United States Military Academy  
 M.S.E., E.E., University of Michigan

**Capt. Orin C. Patton**  
*Assistant Professor of Geography*  
 B.A., M.A., University of Florida

**Maj. Thomas E. Pearsall**  
*Associate Professor of English*  
 A.B., Colgate University  
 M.A., University of Texas  
 Ph.D., University of Denver

**Capt. Warren G. Peck**  
*Assistant Professor of History*  
 B.A., M.A., University of Alabama  
 Extra-Mural Studies, University of  
 Cambridge, England

**Capt. John R. Perkins**  
*Instructor in Mathematics*  
 B.S., United States Naval Academy  
 M.S., Oklahoma State University

**Maj. Norman L. Phillips**  
*Associate Professor of Behavioral Sciences*  
 B.A., University of California at  
 Los Angeles  
 M.A., University of Houston

**Maj. Thomas A. Phillips, Jr.**  
*Assistant Professor of History*  
 B.S., United States Military Academy  
 M.A., University of Colorado

**Capt. Thomas C. Pinckney, Jr.**  
*Assistant Professor of Political Science*  
 B.A., The Citadel  
 M.A., Syracuse University

**Capt. Robert B. Piper**  
*Instructor in Aeronautics*  
 B.S.M.E., University of New Hampshire  
 M.S.M.E., Stanford University

**Capt. Edward G. Platt, Jr.**  
*Instructor in Mathematics*  
 B.S., University of The South  
 M.S., Florida State University

**Capt. John T. Poirier**  
*Instructor in Political Science*  
 B.S., United States Military Academy  
 M.P.A., Harvard University

**Capt. Ben M. Pollard**  
*Instructor in Aeronautics*  
 B.S., M.S., Purdue University

**Col. Wesley W. Posvar**  
*Permanent Professor and Head of Department  
 of Political Science (On leave of absence  
 at Harvard University)*  
 B.S., United States Military Academy  
 B.A., M.A., Oxford University, England

**Capt. John C. Powell**  
*Assistant Professor of English*  
 B.S., United States Military Academy  
 M.A., Stanford University

**Capt. Richard H. Prater**  
*Assistant Professor of Physics*  
 B.S., United States Military Academy  
 M.S., University of Colorado

**Capt. Albert E. Preyss**  
*Instructor in Astronautics*  
 S.B., S.M., E.A.A., Massachusetts Institute  
 of Technology

**Maj. Robert E. Pursley**  
*Associate Professor of Economics*  
 B.S., United States Military Academy  
 M.B.A., Harvard University

**Capt. Edgar F. Puryear, Jr.**  
*Research Associate, Directorate of Research;  
 Assistant Professor of Political Science*  
 B.S., University of Maryland  
 M.A., University of Denver  
 M.A., Ph.D., Princeton University

**Capt. John S. Pustay**  
*Instructor in Political Science*  
 B.S., United States Naval Academy  
 M.A., San Francisco State University

**Capt. Ernest L. Pyne**  
*Instructor in Aeronautics*  
 B.S.M.E., University of Idaho  
 M.S.M.E., University of Illinois

**Maj. Alton H. Quanbeck**  
*Research Associate, Directorate of Research;  
 Associate Professor of Mechanics*  
 B.S., United States Military Academy  
 M.S. in Eng. Mech., Purdue University  
 Ph.D., Stanford University

**Capt. Robert Raful**  
*Instructor in Behavioral Sciences*  
 B.S., University of California  
 M.B.A., Syracuse University

**Lt. Col. Oscar H. Rechtschaffen**  
*Associate Professor of Political Science*  
 B.S., University of Maryland  
 M.A., George Washington University

**Maj. Robert P. Reid**  
*Assistant Professor of English*  
 A.B., University of New Hampshire  
 A.M., Harvard University

**Maj. Clyde C. Reynolds**  
*Associate Professor of Physics*  
 B.S., United States Military Academy  
 M.S., The Ohio State University

**Maj. Everest E. Riccioni**  
*Instructor in Astronautics*  
 B.S.A.E., M.S. Appl. Math., University of  
 Minnesota

**Maj. Gerald F. Richter**  
*Associate Professor of English*  
 B.A., Nebraska State College  
 M.A., Northwestern University

**Capt. Roger M. Rickey**  
*Instructor in History*  
 B.S., Wisconsin State College  
 M.S., University of Wisconsin

**Capt. John C. Ries**  
*Assistant Professor of Political Science*  
 B.A., Santa Clara University  
 M.A., Detroit University  
 Ph.D., University of California at  
 Los Angeles

**Maj. Donald O. Robb**  
*Assistant Professor of Mathematics*  
 B.S., United States Military Academy  
 M.S., University of Michigan

**Maj. Joseph B. Roberts, Jr.**  
*Associate Professor of English and Philosophy*  
 B.A., University of Alabama  
 M.A., University of North Carolina  
 Ph.D., University of Denver

**Maj. William M. Roberts**  
*Instructor in Geography*  
 B.A., M.A., State University of Iowa

**Maj. William L. Roche**  
*Associate Professor of Russian*  
 B.S., University of Kentucky  
 M.A., Columbia University

**Capt. Davis C. Rohr**  
*Assistant Professor of History*  
 B.S., United States Military Academy  
 M.A., University of Washington



**1/Lt. Charles N. Rollinger***Instructor in Mathematics*

B.M.E., University of Detroit

M.S., Ph.D., Northwestern University

**Capt. Wells P. Rollins***Assistant Professor of Mathematics*

B.S., United States Naval Academy

M.S., University of Illinois

**1/Lt. Erik S. Ronhovde***Instructor in Geography*

A.B., Harvard College

Doctoral Candidate, The Queen's College,  
Oxford, England**Maj. Alfred E. Ross***Instructor in Mathematics*

B.S.A.E., University of Minnesota

M.S.A.E., Massachusetts Institute of  
Technology**Capt. Richard F. Rosser***Assistant Professor of Political Science*

B.A., Ohio Wesleyan University

M.P.A., Ph.D., Syracuse University

**Col. Wilbert H. Ruenheck***Permanent Professor and Head of Department  
of History; Chairman of Humanities Division*

A.A., Kemper Military School

A.B., Washington University

A.M., Ph.D., New York University

**Capt. Ronald E. Rule***Instructor in Mechanics*

B.S., United States Military Academy

M.S.E., Princeton University

**Capt. Richard E. Russell***Instructor in Aeronautics*

B.A., St. Louis University

M.S.A.E., Air Force Institute of Technology

**Capt. Edward T. Ryan***Instructor in German*

B.A., St. Mary's College, California

M.A., Universidad Interamericana, Mexico

**Capt. Malcolm E. Ryan***Counselor and Administrator for Basic  
Sciences; Academic Scheduling Officer;  
Associate Professor of Mathematics*

B.S., United States Military Academy

M.S., University of Colorado

**Capt. Donald M. Sackschewsky***Instructor in Mathematics*

B.S., Colorado State University

Graduate Study, University of Colorado

**Col. Charles W. Sampson***Assistant Dean for Administration*

B.S., United States Military Academy

M.S., The Ohio State University

**Maj. John H. Saxon, Jr.***Instructor in Electrical Engineering*

B.S., United States Military Academy

M.E.E., University of Oklahoma

**Capt. John Schlight***Instructor in History*

B.A., St. Vincent's College

M.A., Fordham University

M.A., Princeton University

**Maj. Calvin H. Schmid***Assistant Professor of Chemistry*

B.A., University of Wisconsin

M.A., University of Texas

**Capt. Grover J. D. Schock***Assistant Professor of Physiology*

B.S., M.S., Ph.D., University of Illinois

**Capt. Stephen E. Schoderbek***Instructor in Economics*

B.S., United States Naval Academy

M.S., University of Wyoming

**Maj. Brent Scowcroft***Associate Professor of Political Science*

B.S., United States Military Academy

M.A., Columbia University

**Capt. David W. Seegmiller***Instructor in Chemistry*

B.S., M.S., Brigham Young University

**2/Lt. Bernard B. Selling***Instructor in English*

B.A., M.A., University of Michigan

**Capt. Jack E. Sexson***Assistant Professor of Behavioral Sciences*

B.A., Colorado State College

M.Ed., Trinity University

Ed.D., Colorado State College

**Capt. William R. Shaw***Instructor in Aeronautics*

B.S., University of Idaho

M.S.M.E., Stanford University

**Capt. Alfred E. Sheldon, Jr.***Instructor in English*

B.S., United States Military Academy

M.A., Washington State University

**Capt. Donald R. Smith***Assistant Professor of Physics*

B.A., Kansas State College

M.S. (Equivalent), Air Force Institute of  
Technology

M.A., University of Colorado

**Capt. Douglas L. Smith***Research Associate, Directorate of Research;**Assistant Professor of Physiology*

B.S., Ph.D., University of Utah

**Col. Herman F. Smith**  
*Professor and Head of Department of  
 Behavioral Sciences*  
 A.B., M.A., George Washington University

**Lt. Col. Norman H. Smith**  
*Associate Professor of Mathematics*  
 B.S., Westchester State College  
 M.S., State University of Iowa  
 Ed.D., University of Colorado

**Capt. Duane W. Smetana**  
*Instructor in Mechanics*  
 B.S., United States Military Academy  
 M.S., Astronautics, Air Force Institute of  
 Technology

**Capt. Leo V. Sovinsky**  
*Assistant Professor of Russian*  
 B.A., New York University  
 M.A., Columbia University

**Maj. Edwin C. Spencer**  
*Assistant Professor of Mathematics*  
 B.S., Glassboro State College  
 M.S., University of Pennsylvania

**Lt. Col. Milton D. Sprinkel**  
*Associate Professor of Chemistry*  
 B.S., Oklahoma State University  
 M.S., Purdue University

**Maj. Michael J. Steger**  
*Assistant Professor of Mathematics*  
 B.S., United States Military Academy  
 M.S., Agricultural and Mechanical College  
 of Texas

**Maj. Arthur R. Steiger**  
*Executive Officer, Research Directorate;  
 Associate Professor of Aeronautics*  
 B.S., Purdue University  
 M.S.A.E. (Equivalent), Air Force Institute  
 of Technology

**Capt. William J. Stelpflug**  
*Instructor in Aeronautics*  
 B.S.M.E., University of Notre Dame  
 M.S.M.E., University of Colorado

**Maj. David B. Stevens**  
*Assistant Professor of Law*  
 B.S., LL.B., University of North Carolina  
 LL.M., Duke University

**Maj. Everett E. Stevenson**  
*Associate Professor of Mathematics*  
 B.S., Buffalo State Teachers College  
 M.Ed., University of Houston  
 Ph.D., The Ohio State University

**Capt. Robert A. Stewart**  
*Instructor in Mechanics*  
 B.S., United States Military Academy  
 M.S., University of Maryland

**Maj. Robert E. Stockhouse**  
*Associate Professor of Behavioral Sciences*  
 B.S., Black Hills Teachers College  
 M.A., Columbia University  
 Ed.D., Stanford University

**Lt. Col. Donald M. Stonebraker**  
*Instructor in Electrical Engineering*  
 B.S., M.S., University of Colorado

**Capt. Victor D. Sutch**  
*Instructor in History*  
 B.A., Olivet College  
 M.A., Western Reserve University  
 Ph.D., University of Colorado

**Maj. Wesley D. Sweetser**  
*Associate Professor of English*  
 B.A., M.A., Ph.D., University of Colorado

**Capt. Lawrence B. Tatum**  
*Instructor in Political Science*  
 B.S., United States Military Academy  
 Ph.D., Syracuse University

**Capt. Everette Taylor**  
*Instructor in English*  
 B.S., United States Military Academy  
 M.A., Columbia University

**Lt. Col. Robert G. Taylor**  
*Associate Professor of Geography*  
 B.A., University of California at  
 Los Angeles  
 M.A., Ph.D., Indiana University

**Maj. Michel C. M. J. Terlinden**  
*(Belgian Air Force)*  
*Assistant Professor of French*  
 Ecole Royale Militaire, Brussels, Belgium  
 Ecole de Guerre, Brussels, Belgium

**Capt. Roland E. Thomas**  
*Associate Professor of Astronautics*  
 B.S., New Mexico State University  
 M.S., Stanford University  
 Ph.D., University of Illinois

**Maj. Joseph J. Thompson**  
*Instructor in Mathematics*  
 B.S., United States Military Academy  
 M.S.E.E., Air Force Institute of Technology

**Maj. William J. Thorpe**  
*Associate Professor of History*  
 B.S., M.A., University of Minnesota

**Capt. John B. Tindall**  
*Instructor in Mathematics*  
 B.S., United States Military Academy  
 M.S., University of Utah

**Capt. Daniel D. Traficante**  
*Instructor in Chemistry*  
 B.S., Syracuse University  
 Ph.D., Massachusetts Institute of  
 Technology

**Capt. Vernon R. Vanyonderen**  
*Assistant Professor of Chemistry*  
 B.S., United States Military Academy  
 M.S., University of Colorado

**Capt. Servando J. Velarde, Jr.**  
*Associate Professor of Spanish*  
 B.S., M.A., New York University

**Maj. Mario L. Ventura**  
*Instructor in Law*  
 B.A., University of Rochester  
 LL.B., Cornell Law School

**Capt. Joseph L. N. Violette**  
*Instructor in Electrical Engineering*  
 B.E.E., Rensselaer Polytechnic Institute  
 Doctoral Candidate, North Carolina State  
 College

**Capt. Malham M. Wakin**  
*Assistant Professor of English and Philosophy*  
 A.B., University of Notre Dame  
 A.M., State University of New York  
 Ph.D., University of Southern California

**Maj. Edward T. Walford**  
*Assistant Professor of Chemistry*  
 B.S., Purdue University  
 M.S., University of Michigan

**Sqdn. Ldr. J. Walsh (Royal Air Force)**  
*Assistant Professor of Political Science*  
 B.A., DIP. ED., Durham University,  
 England

**Maj. John A. Walter**  
*Associate Professor of Behavioral Sciences*  
 B.S., United States Military Academy  
 B.A., M.B.A., Syracuse University

**Capt. William E. Ward**  
*Instructor in Physiology*  
 B.A., The Ohio State University  
 M.A., Duke University

**Capt. Walter E. Ware**  
*Instructor in Physics*  
 B.S., United States Naval Academy  
 Ph.D., University of Colorado

**Capt. Carl R. Webb**  
*Instructor in Mathematics*  
 B.S., United States Naval Academy  
 M.A., University of California at  
 Los Angeles

**Maj. Walter E. Weese**  
*Associate Professor of English and Fine Arts*  
 A.B., University of Toledo  
 M.A., Ph.D., Yale University

**Capt. John William Welch**  
*Assistant Professor of Aeronautics*  
 B.S. AgE., B.S.A.E., M.S.A.E., Agricultural  
 and Mechanical College of Texas

**Capt. John A. Wesner**  
*Instructor in Electrical Engineering*  
 B.S., United States Military Academy  
 M.S.E.E., University of Nebraska

**Maj. Fredrick R. Westfall**  
*Associate Professor of Physics*  
 B.S., United States Military Academy  
 M.S., Ph.D., North Carolina State College

**Capt. Jerry D. Wethington**  
*Assistant Professor of Mathematics*  
 B.S., University of New Mexico  
 M.S., Stanford University

**Capt. Richard T. White**  
*Instructor in Physics*  
 B.S., United States Military Academy  
 M.S., The Ohio State University

**Maj. Robert W. White**  
*Assistant Professor of Electrical Engineering*  
 B.S., United States Military Academy  
 M.S., University of Illinois

**Capt. Richard E. Willes**  
*Instructor in Aeronautics*  
 B.S., United States Naval Academy  
 S.M.A.A., E.A.A., Massachusetts Institute  
 of Technology

**Col. James V. G. Wilson**  
*Permanent Professor and Head of Department  
 of Electrical Engineering (On temporary  
 duty at NORAD, Colorado Springs)*  
 B.S., United States Military Academy  
 M.S., University of Illinois

**Maj. John P. Wittry**  
*Instructor in Mechanics*  
 B.S., St. Louis University  
 M.S., Air Force Institute of Technology  
 Aero & Astro E., University of Michigan

**Lt. Col. Henry E. Wojdyla**  
*Associate Professor of Behavioral Sciences*  
 B.A., Sacramento State College  
 M.A., Baylor University

**Col. William T. Woodyard**  
*Permanent Professor and Head of Department  
 of Chemistry and Physiology; Chairman of  
 the Basic Science Division*  
 B.S., A.M., University of Missouri

**Maj. George E. Yale, Jr.**  
*Counselor and Administrator of Applied  
 Sciences; Associate Professor of Aeronautics*  
 B.S., M.S., University of Minnesota

**Capt. Richard P. Yantis**  
*Instructor in Mathematics*  
 B.S., United States Naval Academy  
 M.A., University of North Carolina

**Col. Wayne A. Yeoman**

*Permanent Professor and Head of Department  
of Economics and Geography; Chairman of  
Social Sciences Division*

B.S., United States Military Academy  
M.B.A., Harvard University

**Maj. Yuan Hsi-Jou (Chinese Nationalist  
Air Force)**

*Instructor in Chinese*

B.S., National Normal University  
(Peiping)

Lecturer, National Northeastern University  
(Shen-yang)

**Capt. Frank J. Zagorski**

*Assistant Professor of Russian*

B.S., United States Military Academy  
M.P.I.A., University of Pittsburgh

**Capt. David D. Zink, II**

*Assistant Professor of English*

B.J., University of Texas  
M.A., Ph.D., University of Colorado

**Capt. David H. Zook, Jr.**

*Associate Professor of History*

A.B., Wittenberg University  
M.A., Ph.D., The Ohio State University  
Post-Doctoral Study, Universidad Nacional  
de San Marcos, Lima, Peru

**The Airmanship Program**

*In the duty titles that follow, AOC is an abbreviation for Air Officer  
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*Executive, Wing Air Officer Commanding*

B.A., Drake University  
M.Ed., University of Colorado

**Capt. Joe E. Anderson**

*Course Director in Military Training*

B.S., United States Military Academy  
M.S.E., University of Michigan

**Capt. Lewis S. Andrews, III**

*Course Director in Military Training*

B.S., United States Military Academy

**Maj. Benjamin H. Ashmore**

*AOC, 1st Cadet Group*

B.B.A., University of Omaha

**Capt. Arthur N. Askew**

*AOC, 3rd Cadet Squadron*

B.A., University of Tulsa

**Capt. Walter J. Bacon**

*AOC, 1st Cadet Squadron*

B.S., United States Military Academy  
M.A., University of Southern California

**Lt. Col. Homer A. Baker, Jr.**

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University of California

**Maj. Warren J. Bale**

*Chief, Operations Branch*

B.S., University of Oklahoma

**Maj. Robert S. Barmettler**

*Director of Cadet Activities*

A.B., San Jose State College

**Capt. Robert W. Bazley**

*Plans and Scheduling Officer*

B.S., University of Pittsburgh

**CWO, W4, Arthur T. Boswell**

*Officer-in-Charge, Procurement & Food  
Preparation Dept., Cadet Dining Hall*

**Capt. Arnim L. Brantley**

*AOC, 4th Cadet Squadron*

B.S., United States Military Academy  
M.S., Air Force Institute of Technology

**Capt. James E. Briggs, Jr.**

*Assistant AOC, 5th Cadet Squadron*

B.S., United States Military Academy

**Lt. Col. George A. Brown**

*Chief, Training Division*

B.S., United States Military Academy

**Capt. James T. Brown**

*Instructor in Navigation*

B.S., United States Naval Academy

**Capt. Robert A. Carlone**

*AOC, 24th Cadet Squadron*

B.S., United States Military Academy  
M.A., Middlebury College  
Studies, University of Madrid, Spain

**Capt. Robert D. Carter**

*AOC, 17th Cadet Squadron*

B.S., The Citadel

**Maj. Edward J. Cavanaugh (U. S. Army)**

*Course Director in Military Training;*

*U. S. Army Exchange Officer*

B.S., United States Military Academy

**Capt. William M. Charles, Jr.**

*Assistant AOC, 23rd Cadet Squadron*

B.S., United States Military Academy



**Capt. Lloyd R. Chason**  
*Assistant AOC, 12th Cadet Squadron*  
 B.S., East Carolina College  
 M.A., Baylor University

**Capt. Robert P. Christiansen**  
*Assistant AOC, 13th Cadet Squadron*  
 B.S., United States Military Academy

**Maj. William G. Christensen**  
*Course Director in Military Training*  
 B.B.A., Baylor University

**Maj. Kelly F. Cook**  
*AOC, 19th Cadet Squadron*  
 B.A., University of Notre Dame  
 M.A., University of North Carolina

**Capt. Alan Coville**  
*Course Director in Military Training*  
 B.A., Marlboro College

**Maj. George A. Crane, Jr.**  
*Course Director in Military Training*  
 B.A., Virginia Military Institute

**Lt. Col. James B. Crump**  
*AOC, 2nd Cadet Group*  
 University of Oregon

**Capt. Gordon E. Danforth**  
*AOC, 8th Cadet Squadron*  
 B.S., United States Military Academy  
 M.S., University of Michigan

**CWO, W3, Frederick W. Dent**  
*Director of Cadet Wing Personnel*

**LCDR Richard C. Doan (U.S. Navy)**  
*Assistant AOC, 6th Cadet Squadron*  
 B.S., United States Naval Academy

**Capt. Harry E. Drennan**  
*Assistant AOC, 17th Cadet Squadron*  
 B.A., Michigan State University

**Maj. Robert K. Eckert**  
*Instructor in Navigation*  
 B.S., Pennsylvania State Teachers College  
 M.S., Syracuse University

**Capt. John R. Evanko**  
*Assistant AOC, 1st Cadet Squadron*  
 B.A., Fairfield University

**Col. Victor J. Ferrari**  
*Wing Air Officer Commanding*  
 B.S., State Teachers College, Pennsylvania  
 M.S., University of Southern California

**CWO, W3, Leon O. Files**  
*Officer-in-Charge, Supply and Services Dept.,  
 Cadet Dining Hall*

**Lt. Col. David E. Fitton**  
*AOC, 3rd Cadet Group*  
 B.S., United States Military Academy

**Maj. John P. Gaffney**  
*AOC, 4th Cadet Group*  
 Kent State University

**Maj. Donald W. Galvin**  
*Course Director in Military Training*  
 B.S., Georgetown University  
 M.A., Stanford University

**Capt. Robert L. Geasland**  
*Assistant AOC, 8th Cadet Squadron*  
 B.S., United States Military Academy

**Capt. Jack W. Gentry**  
*AOC, 14th Cadet Squadron*  
 B.A., University of Tulsa

**Capt. Henry W. Green, Jr.**  
*Instructor in Navigation*  
 B.S., University of Southern California

**Capt. Leonard L. Griggs, Jr.**  
*Assistant AOC, 21st Cadet Squadron*  
 B.S., United States Military Academy  
 M.S., Air Force Institute of Technology

**CWO, W3, Willard D. Hagey**  
*Administrative Officer, Commandant of  
 Cadets*

**Capt. John A. Hall**  
*Assistant AOC, 10th Cadet Squadron*  
 B.A., University of Mississippi

**Capt. Isaac M. Hamilton**  
*Assistant AOC, 22nd Cadet Squadron*  
 B.S., University of Southwestern Louisiana

**Maj. Frank M. Hammock**  
*AOC, 6th Cadet Squadron*  
 B.S., Florida State University  
 M.S., University of Colorado

**Capt. Charles W. Hammond**  
*AOC, 16th Cadet Squadron*  
 B.S., United States Military Academy  
 M.A., University of Texas

**Capt. Thomas R. Hataway**  
*Supply and Services Officer*  
 B.B.A., Baylor University

**Col. James H. Heaberg**  
*Director of Operations and Training*  
 B.S., Lambuth College

**Lt. Col. Ralph B. Hemmig**  
*Chief, Fundamentals Branch*  
 B.A., Sacramento State College

**S/Ldr. Walter J. Herrington (RAF)**  
*Course Director in Military Training;  
 Royal Air Force Exchange Officer*  
 London University

**Capt. Joseph L. Hotard, III**  
*Officer-in-Charge, Cadet Dining Hall*  
 B.S., Southwestern Louisiana Institute

**Capt. Alvin H. Hufford**  
*Assistant AOC, 24th Cadet Squadron*  
 B.S., Kent State University

**Capt. Ted W. Jensen**  
*Assistant AOC, 20th Cadet Squadron*  
 B.A., University of Iowa

**Capt. Verle L. Johnston**  
*AOC, 18th Cadet Squadron*  
 B.S., United States Military Academy  
 M.S., North Carolina State College

**Capt. Lyman M. Kidder**  
*Assistant AOC, 9th Cadet Squadron*  
 B.S., University of Colorado

**Capt. Charles E. Koeninger**  
*AOC, 7th Cadet Squadron*  
 B.S., B.B.A., University of Texas  
 M.B.A., University of Arizona

**Maj. William R. Lambert**  
*AOC, 22nd Cadet Squadron*  
 B.S., United States Military Academy  
 M.S., University of Colorado

**Capt. James W. Leland**  
*Course Director in Military Training*  
 B.S., United States Military Academy

**Maj. William I. MacLachlan**  
*AOC, 9th Cadet Squadron*  
 B.S., United States Military Academy

**Maj. William J. Mahon**  
*Course Director in Navigation*  
 B.S., University of Houston  
 M.A., Columbia University

**Capt. Frederick A. Mathews**  
 (U. S. Marine Corps)  
*Assistant AOC, 4th Cadet Squadron*  
 B.S., United States Naval Academy

**Capt. Harold A. Mauger, Jr.**  
*Assistant AOC, 7th Cadet Squadron*  
 B.S., The Citadel

**Maj. Leon W. McCrary**  
*Plans and Scheduling Officer*  
 B.S., United States Military Academy

**Lt. Col. Maurice E. McNabb**  
*Director of Cadet Wing Services*

**Capt. Charles H. Milian, Jr.**  
*Course Director in Military Training*  
 B.S., University of Florida

**Lt. Col. Wallace E. Moore**  
*Chief, Planetarium Branch*  
 Purdue University

**Capt. Angelo A. Morinello**  
*AOC, 23rd Cadet Squadron*  
 B.S. (Math), B.S. (Mech Eng), University  
 of Houston  
 M.S., University of Colorado

**Maj. Clyde V. Myers**  
*Officer-in-Charge, Cadet Store*  
 B.S., Florida State University  
 M.S., New York University

**Capt. Gerald J. Naber**  
*AOC, 20th Cadet Squadron*  
 B.S., United States Military Academy

**Lt. Col. Jamieson H. B. Newell**  
*Chief, Navigation Division*  
 B.B.A., University of Pittsburgh  
 M.B.A., University of Colorado

**Capt. Emmett A. Niblack, Jr.**  
*AOC, 11th Cadet Squadron*  
 B.S., United States Military Academy  
 M.S. of A.E., University of Oklahoma

**Capt. Roland L. Nordlie**  
*AOC, 13th Cadet Squadron*  
 B.S., United States Military Academy  
 M.S., University of Colorado

**Capt. Robert E. Olson**  
*Instructor in Navigation*  
 B.S., United States Military Academy

**Capt. Robert A. Owens**  
*AOC, 12th Cadet Squadron*  
 B.S., United States Naval Academy

**Capt. Marvin C. Patton**  
*AOC, 10th Cadet Squadron*  
 B.S., Colorado State University  
 M.S., University of Colorado

**Capt. Milton R. Peterson**  
*Assistant AOC, 11th Cadet Squadron*  
 B.S., University of California at  
 Los Angeles

**Capt. Donald W. Rayment**  
*Assistant AOC, 16th Cadet Squadron*  
 A.B., Bowdoin College

**Maj. John C. Reed**  
*Chief, Plans and Scheduling Division*  
 B.S., United States Military Academy

**Maj. John F. Reilly**  
*Plans and Scheduling Officer*  
 B.S., Florida Southern College

**F/L Pelton P. Richardson (RCAF)**  
*Instructor in Navigation*  
 Dalhousie University, Canada

**Maj. Laurence J. Rooney**  
AOC, 21st Cadet Squadron  
Utah State College

**CDR Sam Rorex, Jr. (U. S. Navy)**  
*Course Director in Military Training;*  
*U. S. Navy Exchange Officer*  
A.B., Marion Military Institute  
B.S., United States Naval Academy

**1st Lt. Edwin L. Rosane**  
*Aide-de-Camp, Commandant of Cadets*  
B.S., United States Air Force Academy

**Capt. Donald D. Smith**  
*Assistant AOC, 3rd Cadet Squadron*  
B.S., United States Naval Academy

**Capt. Billy J. Stahl**  
*Instructor in Navigation*  
B.B.A., Agricultural and Mechanical  
College of Texas

**Capt. Daniel M. Stark**  
*Instructor in Navigation*  
B.S., United States Naval Academy

**Capt. Charles S. Steen (U. S. Army)**  
AOC, 15th Cadet Squadron  
B.S., United States Military Academy

**Capt. Harvey J. Stewart**  
*Assistant AOC, 2nd Cadet Squadron*  
B.S., Texas Technological College

**Brig. Gen. Robert W. Strong, Jr.**  
*Commandant of Cadets*  
B.S., United States Military Academy

**Lt. Col. John L. Sullivan**  
*Assistant Director of Cadet Wing Services*

**Maj. Tyler W. Tandler**  
AOC, 2nd Cadet Squadron  
B.S., United States Military Academy  
M.S.E., University of Michigan

**Capt. James A. Turner, Jr.**  
*Instructor in Navigation*  
B.A., Albion College

**Capt. Elbert M. Underwood**  
*Instructor in Navigation*  
B.S., Simpson College

**Capt. Frank G. Walton (U. S. Army)**  
*Assistant AOC, 19th Cadet Squadron*  
B.S., United States Military Academy

**Capt. Monte D. Wright**  
*Instructor in Navigation*  
B.A., M.A., Baylor University

**Capt. Paul R. Zavitz**  
AOC, 5th Cadet Squadron  
B.S., United States Military Academy

**Capt. Irwin R. Ziff**  
*Assistant AOC, 18th Cadet Squadron*  
B.A., Brooklyn College

## ***Physical Education and Athletics***

**Maj. Ronald G. Allen**  
*Chief, PE Intramural Division; Golf Coach;*  
*Assistant Basketball Coach*  
B.S., M.S., University of Kentucky

**Arne U. Arnesen**  
*Instructor in Physical Education;*  
*Cross-Country Coach; Track Coach*  
B.S., University of Wisconsin  
M.S., Springfield College

**Capt. Steven W. N. Arnold**  
*Instructor in Physical Education;*  
*Assistant Gymnastics Coach*  
B.S., United States Naval Academy

**Capt. Gordon Bass**  
*Supply Officer, Support Division*  
B.A., North Texas State University  
M.A., San Francisco State College

**Lt. Col. Felix A. Blanchard**  
*Freshman Football Coach*  
B.S., United States Military Academy

**Capt. James N. Bowman**  
*Junior Varsity Football Coach*  
B.S., University of Michigan

**Capt. Joe L. Bradley**  
*Instructor in Physical Education;*  
*Assistant Basketball Coach*  
B.A., Oklahoma State University

**Capt. David H. Coats**  
*Instructor in Physical Education*  
B.S., New Mexico State College  
M.S., University of Oregon

**James I. Conboy**  
*Athletic Trainer*  
A.B., University of Denver  
R.P.T., University of Colorado

**Capt. Lloyd C. Corder**  
*Instructor in Physical Education;*  
*Assistant Track Coach*  
B.S., East Texas State College

**Capt. Carl B. Crews**  
*Instructor in Physical Education*  
B.S., United States Military Academy

**Capt. A. Joseph DeCarlo**  
*Instructor in Physical Education;*  
*Ski Coach*  
 B.A., Syracuse University

**Maj. Richard L. Dadds**  
*Comptroller*

**Capt. Richard L. Fritts**  
*Instructor in Physical Education;*  
*Assistant Wrestling Coach*  
 B.S., Rutgers University

**1st Lt. Stephen E. Galios**  
*Assistant Football Coach*  
 B.S., United States Air Force Academy

**Capt. Sidney A. Glenn**  
*Chief, Research and Evaluation Section;*  
*Instructor in Physical Education*  
 B.A., M.A., Arizona State University

**Warren F. Goodrich**  
*Public Relations Director;*  
*Ticket Manager*  
 A.B., Stanford University

**Capt. John N. Gordon**  
*Instructor in Physical Education*  
 B.A., Syracuse University

**Capt. Donald V. Hicks**  
*Candidate Advisory Service, Intercollegiate*  
*Athletics*  
 B.S., Bradley University

**Robert C. James**  
*Assistant Director for Intercollegiate Athletics*  
 B.S., University of Maryland

**Karl A. Kitt**  
*Instructor in Physical Education;*  
*Wrestling Coach*  
 B.S., Southwestern State Teachers  
 College, Oklahoma

**Lt. Col. George H. Krug, Jr.**  
*Executive Officer, Cadet Athletics*  
 Colgate University

**Capt. Wendell Lawrence**  
*Candidate Advisory Service, Intercollegiate*  
*Athletics; Baseball Coach*  
 B.S., Michigan State University

**Capt. Harry F. Lenahan, Jr.**  
*Candidate Advisory Service, Intercollegiate*  
*Athletics*  
 B.A., King's College, Pa.

**Capt. Walter A. Lenz**  
*Chief, PE Administrative Branch;*  
*Assistant Basketball Coach*  
 A.B., Franklin and Marshall College

**Capt. Nicholas A. Lontas**  
*Instructor in Physical Education*  
 B.S., United States Naval Academy

**Capt. Thomas C. Lynch**  
*Instructor in Physical Education*  
 B.S., United States Naval Academy

**Ben S. Martin**  
*Head Football Coach*  
 B.S., United States Naval Academy

**Col. M. L. Martin**  
*Director of Athletics*  
 B.S., United States Military Academy

**Joseph C. Moss**  
*Assistant Football Coach*  
 B.S., University of Maryland

**Capt. Robert E. Nugent**  
*Instructor in Physical Education;*  
*Swimming Coach*  
 B.S., Rutgers University

**Maj. Charles W. Oliver**  
*Chief, PE Instructional Division; Tennis Coach*  
 B.S., United States Military Academy  
 M.A., Columbia University

**Capt. Godwin Ordway, III, (U. S. Army)**  
*Instructor in Physical Education;*  
*Assistant Football Coach*  
 B.S., United States Military Academy

**Maj. Laurence E. Owens**  
*Deputy Head of PE Department;*  
*Assistant Tennis Coach*  
 B.S., Iowa State University  
 M.A., Colorado State College of Education  
 P.E.D., Indiana University

**Capt. Allan L. Parks**  
*Candidate Advisory Service, Intercollegiate*  
*Athletics*  
 B.S., Alabama Polytechnic Institute

**Robert D. Peck, Jr.**  
*Head of Sports Publicity*  
 B.S., University of Omaha

**1st Lt. David J. Phillips**  
*Candidate Advisory Service, Intercollegiate*  
*Athletics*  
 B.S., United States Air Force Academy

**Maj. William E. Quinlan**  
*Chief, Support Division*  
 B.S., University of Wyoming  
 M.S., San Jose State College

**Charles Rash**  
*Assistant Football Coach*  
 B.S., University of Missouri

**Capt. Wilbert H. Richarz**  
*Instructor in Physical Education*  
 B.S., Trinity University

**Capt. Richard E. Russ**  
*Stadium Manager*  
 Centenary College

**1st Lt. Orwyn Sampson**  
*Instructor in Physical Education*  
 B.S., M.S., University of California at  
 Los Angeles



**Maj. John Schwall**

*Chief, Candidate Advisory Service,  
Intercollegiate Athletics*

**Homer A. Smith**

*Assistant Football Coach  
B.A., Princeton University  
M.B.A., Stanford University*

**Lt. Col. John S. Sparks, Jr.**

*Head of Department of Physical Education  
B.S., Texas Christian University  
M.S., University of Texas*

**Lt. Col. (Ret.) Robert B. Spear**

*Head Basketball Coach  
A.B., DePauw University*

**Capt. Jack M. Steger**

*Instructor in Physical Education;  
Assistant Track and Cross Country Coach  
B.S., New Mexico Agricultural and  
Mechanical College  
M.A., Indiana University*

**Capt. Donald T. Steinbrunner**

*Assistant Football Coach  
B.S., Washington State University*

**Capt. Robert K. Strickland**

*Instructor in Physical Education;  
Soccer Coach  
B.S., United States Military Academy*

**Capt. James H. Tanaka**

*Instructor in Physical Education;  
Gymnastics Coach  
B.S., M.S., Florida State University*

**Nicholas G. Toth**

*Instructor in Physical Education;  
Fencing Coach  
Central Institute of Sports and Fencing  
Academy, Budapest, Hungary*

**Capt. Harold J. Walter**

*Instructor in Physical Education  
B.S., Springfield College*

## ACADEMY SERVICES STAFF

### *Air Force Academy Band*

**Capt. Harold L. Copenhagen**

*Commander, Air Force Academy Band  
A.B., M.A., Professional Certificate,  
American University  
Min. of Music, Mary Washington College*

### *Air Force Academy Foundation*

**Maj. Brice E. Macartney**

*Assistant Chief of Staff and Liaison for the  
Academy Foundation  
University of Maryland*

### *Air Force Academy Library*

**Lt. Col. George V. Fagan**

*Permanent Professor; Director of the Library  
B.S., M.A., Temple University  
M.A.L.S., University of Denver  
Ph.D., University of Pennsylvania*

**2nd Lt. Juergen A. Heise**

*Executive Officer  
B.A., M.A., Syracuse University*

**Donald J. Barrett**

*Chief of Public Services  
B.S., College of St. Thomas*

**Miss A. Talma Bayless**

*Chief of Book Selection and Acquisitions  
A.B., B.S.L.S., University of Denver*

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*Chief of Cataloging and Processing  
B.S.B.A., M.A.L.S., University of Denver*

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*Chief, Cadet Activities Division  
B.A., University of Massachusetts*

**Mrs. Gail McComas**

*Cadet Wing Hostess*

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*Catholic Chaplain  
B.A., Mt. St. Alphonsus Seminary*

**Col. George J. Cameron**

*Protestant Chaplain  
B.A., Albion College  
B.D., Northwestern University*

**Maj. Warren J. Bedingfield**

*Protestant Chaplain  
B.A., Mercer University  
B.D., New Orleans Baptist Theological  
Seminary*

**Capt. Marvin L. Labinger**

*Jewish Chaplain  
B.A., Brooklyn College  
B.H.L., Seminary College of Jewish Studies  
M.H.L., Jewish Theological Seminary of  
America*

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*Director of Information  
University of Texas*

**Maj. John W. Keeler**  
*Information Officer*  
 Virginia Polytechnic Institute

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*Information Officer*  
 B.J., University of Texas

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*Information Officer*  
 B.A., University of Maryland

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*Academy Surgeon*  
 M.D., University of Louisville

**Col. Orville J. Eslick**  
*Executive Officer*

**Col. Leonard S. Johnston, Jr.**  
*Director of Academy Dental Services*  
 D.D.S., Washington University,  
 St. Louis, Mo.

**Lt. Col. Arthur E. Weigel**  
*Director of Hospital Services*  
 M.D., Washington University,  
 St. Louis, Mo.

**Lt. Col. Hilda R. Echols**  
*Director of Nursing Services*  
 R. N. Kings Daughters Hospital,  
 Greenville, Miss.

**Maj. Wallace G. Haworth**  
*Director of Aerospace Medical Services*  
 M.D., University of Oregon  
 MPH., Johns Hopkins University

### ***Staff Judge Advocate***

**Col. Christopher H. Munch**  
*Staff Judge Advocate*  
 B.S., United States Military Academy  
 J.D., University of Illinois

**Maj. Thomas J. Krauska**  
*Deputy Staff Judge Advocate*  
 LL.B., St. Louis University

## **Office of the Registrar**

**Col. Virgil J. O'Connor**  
*Registrar*  
 B.A., State College of Iowa  
 M.A., University of Michigan  
 Ed.D., Harvard University

### ***Admissions***

**Lt. Col. Charles C. Anderson, Jr.**  
*Director of Admissions*  
 B.A., M.A., Sacramento State College

**Capt. Alfred W. Jones**  
*Assistant Director of Admissions*  
 A.B., Haverford College

### ***Evaluation***

**Lt. Col. Cary A. Thompson, Jr.**  
*Director of Evaluation*  
 B.A., Hampden-Sydney College

**Risdon J. Westen**  
*Chief of Research Division*  
 B.S., University of Illinois  
 Doctoral Candidate, University of Denver

**Dr. George Cronkhite**  
*Chief of Examinations Division*  
 B.A., Gooding College  
 M.S., Ed.D., University of Utah

### ***Cadet Records***

**Capt. Naomi McCracken**  
*Director of Cadet Records*  
 B.A., New Mexico Highlands University  
 M.A., University of Kentucky

### ***Cadet Counseling***

**Maj. Bernard M. Smith**  
*Director of Cadet Counseling*  
 B.S., M.A., University of Louisville  
 M.A., D.Ed., University of Kentucky

**Maj. Randolph E. Stevens**  
*Assistant Director of Cadet Counseling*  
 B.S., Iowa State University  
 M.A., Columbia University

### ***Candidate Advisory Service***

**Lt. Col. Floyd C. Ethridge**  
*Director of Candidate Advisory Service*  
 B.A., Sacramento State College

#### ***Assistant Directors:***

**Maj. James J. Ves'sells**  
 B.S., Sophia University

**Capt. Stuart W. Shadbolt**  
 B.A., Franklin and Marshall College

**Capt. Billy W. Baker**  
 B.S., Austin Peay State College  
 M.A., Michigan State University

**Capt. James W. Cooksey**  
 B.S., Ohio State University  
 M.A., San Francisco State College

**Miss Ruth Whitaker**  
*Publications Editor*  
 B.S., M.S., North Texas State College





Falcon Stadium



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